17 STANDARD RESPONSES

17.1 Introduction

During public circulation of the Draft Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) in 2020, the California High-Speed Rail Authority (Authority) received 151 written comment letters and verbal comments, containing 2,121 individual comments. During public circulation of the Revised/Supplemental Draft EIR/EIS in 2021, the Authority received 25 comment submissions containing 136 discrete comments. Many of these comments raised similar issues about the San Francisco to San Jose Project Section (Project Section, or project) and its environmental impacts. The Authority has therefore prepared a chapter of standard responses to address the most frequently raised issues.

The standard responses in this chapter provide a comprehensive response to an issue so that multiple aspects of the same issue are addressed in an organized manner in one location. This approach reduces any repetition of responses. When an individual comment raises an issue discussed in a standard response, the response to the individual comment includes a cross reference to the appropriate standard response.

17.2 General Standard Responses

17.2.1 FJ-Response-GEN-1: General Opposition to the Project and the California High-Speed Rail System

Numerous commenters expressed general opposition to the Project Section and to the California High-Speed Rail (HSR) System. Several comments expressed that the project was unnecessary and should not be pursued due to the cost of the project or current lack of funding, the limited project benefits relative to the project's impacts, and the project's inconsistency with California's Proposition 1A, the Safe, Reliable High-Speed Passenger Train Bond Act for the 21st Century (Prop 1A).

These comments present opinions on the San Francisco to San Jose Project Section and on the HSR system generally. The California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) require a lead agency to evaluate all comments on environmental issues received from persons who reviewed the Draft EIR/EIS and to respond to the comments received on significant environmental issues (14 California Code of Regulations [Cal. Code Regs.] § 15088(a) and Federal Railroad Administration [FRA] Procedures for Considering Environmental Impacts § 14(s)). For the comments that offer opinion only, and do not address an environmental issue, the Authority acknowledges the commenters' views. For those comments that offer opinion based on specific project and environmental factors, information regarding the primary concerns expressed in these comments is provided below.

Purpose and Need

As discussed in Section 1.2, Purpose of and Need for the High-Speed Rail System and the San Francisco to San Jose Project Section, in the Draft EIR/EIS, California's population is growing rapidly and, unless new transportation solutions are identified, traffic conditions will only become more congested and travel delays will continue to increase. The proposed HSR system would provide lower passenger costs than air travel for the same city-to-city markets and service that would be competitive with automobile travel. It would increase mobility while reducing air pollution, decreasing dependence on fossil fuels, protecting the environment by reducing greenhouse gas (GHG) emissions, and promoting sustainable development in the areas near the stations compared with existing trends. By improving connectivity, the HSR system would boost California's productivity and enhance the economy. Please refer to Section 1.2.1, Purpose of the High-Speed Rail System; Section 1.2.2, Purpose of the San Francisco to San Jose Project Section; and Section 1.2.4, Statewide and Regional Need for the High-Speed Rail System in the San Francisco to San Jose Project Section.

Project Costs and Funding

It is anticipated that the HSR system will be financed through a combination of federal, state, and private funds. To date, the Authority has secured funding through a combination of federal and state sources including: FRA High-Speed Intercity Passenger Rail Program; California's Prop 1A, adopted by state voters in November 2008; and proceeds from California's Cap-and-Trade Program. *Cap-and-trade* refers to the market-based mechanism established by the California Air Resources Board for achieving the GHG reduction requirements in Assembly Bill (AB) 32. Please refer to the 2020 Business Plan, Chapter 4, Costs and Funding to Deliver the Phase 1 System, for more detailed information regarding current availability of funding and potential options for future funding (Authority 2020a).[1] As disclosed in Section 1.1.3.1, California State Legislation and Funding, and Section 1.1.3.4, the Federal Railroad Administration Grant Agreement, of the Draft EIR/EIS, of the funding currently available for constructing the HSR system, the majority is from state sources.

HSR systems around the world cover their own operating costs through revenues, which is a key reason why 13 nations have built almost 10,000 miles of HSR lines in the last few decades and why 24 countries are planning and building another 16,000 miles. The financial analysis of the California system, described in the 2020 Business Plan, demonstrates that revenues generated by projected ridership would cover the cost of operating the system, meaning that no operational subsidy would be required.

Project Benefits and Impacts

The San Francisco to San Jose Project Section would provide HSR service through a blended system, which would support modernized Caltrain service and HSR service primarily on shared track largely within the existing Caltrain corridor. This approach enhances passenger rail service between San Francisco and San Jose, minimizes impacts on surrounding communities, reduces project cost, improves safety, and expedites implementation. To implement the blended system, the Authority has committed to provide Caltrain with $600 million to support the Caltrain Peninsula Corridor Electrification Project (PCEP), in addition to the investments proposed within the Caltrain corridor as part of the HSR project.

The Authority understands that construction- and operation-related traffic, noise and vibration, safety and security, and visual quality impacts are of particular concern to commenters. Each of these topics is analyzed in detail in their respective sections in the EIR/EIS and the Authority has identified feasible mitigation measures to avoid, reduce, or compensate for impacts. The Project Section is being proposed, despite some adverse effects under NEPA and significant and unavoidable impacts under CEQA, based on the benefits summarized in Section 1.2.4.6, Public Benefits of the High-Speed Rail System to the Bay Area, of the Draft EIR/EIS.

Consistency with Proposition 1A

Prop 1A expressed legislative and voter intent to begin construction of an HSR passenger system connecting San Francisco and Los Angeles/Anaheim and linking the state's major population centers, consistent with the Authority's programmatic environmental documents (refer to Section 1.1.2, The Decision to Develop a Statewide High-Speed Rail System, of the Draft EIR/EIS for additional information about these programmatic documents). As described in Section 1.1.3.1 of the Draft EIR/EIS, California voters approved Prop 1A in November 2008, making $9.95 billion in bond funds available to the Authority for initiating construction of the HSR system. As described in the 2020 Business Plan (Authority 2020a: page 2), the Prop 1A bond measure provided a percentage of the total HSR system cost as estimated in 2008. The expectation was that the state would match the bond funds with other funding such as state, local, federal, and private sources. Between 2008 and 2020, the Prop 1A bond funds have been matched. As explained in the 2020 Business Plan, the amount of funding is not currently enough to complete Phase 1 of the HSR

[1] The 2020 Business Plan is available on the Authority's website: https://hsr.ca.gov/about/high-speed-rail-business-plans/2020-business-plan/#.

project in its entirety, but it is sufficient to advance the HSR system in a manner consistent with Prop 1A (Authority 2020a).

The project alternatives were designed to conform to the Prop 1A requirement that to be eligible for Prop 1A bond funds, the HSR system must be designed to achieve certain characteristics, including a nonstop service travel time of 30 minutes between San Francisco and San Jose, and to follow existing transportation corridors to the extent feasible, as determined by the Authority. The Prop 1A 30-minute travel time requirement is related to the physical design of the system and the capabilities of HSR trains, and is different than average operational service times, which are estimates of average peak-hour service times including station stops. Consistency with Prop 1A was used as a primary criterion for determining which alternatives to carry forward for detailed analysis in the EIR/EIS. Both of the project alternatives analyzed in the EIR/EIS are consistent with Prop 1A.

Alternate Transportation Technologies

Regarding comments that suggest other modes of transportation or technologies, the Authority has considered these in earlier analyses. As described in the Executive Summary; Chapter 1, Project Purpose, Need, and Objectives; and Chapter 2, Alternatives, the Authority and FRA previously decided to use a tiered environmental review process and prepared the *Final Program Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the Proposed California High-Speed Train System* (Statewide Program EIR/EIS) in 2005 (Authority and FRA 2005). The Statewide Program EIR/EIS analyzed the impacts of implementing the 800-mile California HSR System and compared those impacts with the impacts of a No Project Alternative and an alternative of improving airports and freeways to meet the state's future transportation needs. The HSR alternative included consideration of different train technologies/vehicle types, as well as different broad alignment corridors and station locations. The purpose of the analysis was to support broad policy decisions on whether to pursue a high-speed train system, what type, and where. At the conclusion of the Tier 1 environmental review process, the agencies made the following first-tier decisions:

- **Selection of Transportation Option**—Selected the HSR alternative over modal alternative (expanded airports and freeways) and the No Project Alternative (do nothing) to serve California's growing transportation needs
- **Selection of Train Technology**—Selected very-high-speed, electrified steel-wheel-on-steel-rail technology over magnetic levitation; lower speed, electrified steel-wheel-on-steel-rail; and lower speed, diesel (non-electrified) steel-wheel-on-steel-rail
- **Selection of Preferred Alignment Corridors**—Selected preferred alignment corridors for most of the statewide system to be studied in more detail in second-tier EIR/EISs
- **Selection of Preferred Station Locations**—Selected station locations along the preferred alignment corridors to be studied in more detail in second-tier EIR/EISs
- **Adoption of Mitigation Strategies**—Adopted broad mitigation strategies to be refined and applied at the second tier, as part of project planning and development and environmental review

These decisions were not subject to legal challenge (FRA 2005; Authority 2005).

As explained in Section 1.2.4.1, Travel Demand and Capacity Constraints, of the Draft EIR/EIS, the fastest-growing mode of transit for intercity trips is conventional rail, and without HSR the automobile would continue to account for the greatest share of long-distance intercity travel. Because of existing constraints to expanding the large hub airports, high-speed ground travel modes will be needed to alleviate the growing demand and airport capacity constraints. The HSR system would provide an intercity travel option with frequent, reliable service and competitive fares for growing populations.

The objectives of the proposed HSR system include providing an interface with major commercial airports, mass transit, and the highway network. The baseline for the analysis in the EIR/EIS

assumes the completion of the Caltrain PCEP from the 4th and King Street Station in San Francisco to Tamien Station in San Jose. As described in Section 1.4.4, Caltrain Modernization Program, the Caltrain Modernization Program will electrify and upgrade the performance, operating efficiency, capacity, safety, and reliability of Caltrain's commuter rail service through the delivery of several key projects. These include the electrification of the existing Caltrain corridor from San Francisco to San Jose; the implementation of positive train control (PTC); and the replacement of Caltrain's diesel trains with high-performance electric trains or electric multiple units (Caltrain 2018). The Caltrain electrification is scheduled to be completed in 2024.

Some commenters were concerned that the HSR system would use diesel-powered trains. The HSR system in California would run entirely on electricity. The HSR trains would not run on diesel engines. The Authority has a goal of utilizing 100-percent renewable energy to power HSR trains, and the stations and maintenance facilities would be designed to achieve net positive energy consumption by supplying 105 percent of the facility's energy needs through on-site renewable energy generation (Authority 2020b).

Regarding comments that assert HSR is a waste of money and that California should be investing in other means of transportation, there are no other transportation options that can provide the same capacity as HSR for statewide travel. As presented in the Authority's Fact Sheet on Construction, the state would need "4,300 new highway lane miles, 115 additional airport gates, 4 new airport runways costing more than $158 billion with a 50-year maintenance cost of more than $132.8 billion" to provide the same capacity as HSR from San Francisco to Los Angeles (Authority 2020c).

17.2.2 FJ-Response-GEN-2: General Support of the Project and the California High-Speed Rail System

Numerous commenters expressed their general support for the San Francisco to San Jose Project Section and/or the California HSR System. Benefits mentioned include improved transit service and connectivity to Bay Area Rapid Transit (BART) and San Francisco International Airport (SFO), reduced traffic congestion on roadways, reduced GHG emissions, safety improvements at existing at-grade crossings, and economic benefits associated with project construction and operations.

The HSR system would bring significant economic and environmental benefits to California, both in the near term and in the long run. California's population is growing rapidly and, unless new transportation solutions are identified, traffic will become more congested and travel delays will continue to increase. The HSR system would provide lower passenger costs than air travel for the same city-to-city markets. It would increase mobility while reducing air pollution, decreasing dependence on fossil fuels, and protecting the environment by reducing GHG emissions, and promoting sustainable development in areas near the stations compared with existing trends. By improving connectivity, the HSR system would boost California's productivity and enhance the economy. For more information regarding the rationale for building the proposed HSR system, please see Section 1.2.4 in the Draft EIR/EIS.

17.2.3 FJ-Response-GEN-3: Consideration of Plans and Projects

Commenters questioned why proposed projects such as Brisbane Baylands, Geneva Avenue Extension, the Diridon Integrated Station Concept (DISC), and the Downtown West Mixed Use Plan (Google project) were not included or considered in the environmental baseline analysis or cumulative analysis.

Consistent with NEPA and CEQA, the Authority considered local plans in its baseline analysis and cumulative analysis. Because of federal funding and potential safety and other approvals, the HSR project is subject to NEPA. Under NEPA, the lead agency must analyze and compare the effects of the proposed federal action and a reasonable range of alternatives including a No Action Alternative, which is the environmental conditions that would exist in the absence of the proposed action. The No Action Alternative is meant to provide a baseline against which the action alternatives are evaluated. Similarly, CEQA requires that an EIR include the evaluation of a

"no project" alternative (CEQA Guidelines § 15126.6(e)). The No Project Alternative (synonymous with the NEPA No Action Alternative) considers the impacts of conditions forecast by current plans for land use and transportation in the vicinity of the Project Section, including planned improvements to the highway, aviation, conventional passenger rail, freight rail, and port systems, through the 2040 planning horizon for the environmental analysis if the proposed project is not built. The No Project Alternative is explained more in Section 2.6.1, No Project Alternative—Planned Improvements, in the Final EIR/EIS.

Under NEPA, an EIS must describe the environment of the area affected by the alternatives under consideration. Under CEQA, an EIR must describe the existing environmental setting in the vicinity of the project, which is generally the physical environmental conditions as they exist at the time the Notice of Preparation (NOP) is published or the EIR process begins (CEQA Guidelines § 15125(a)). This normally constitutes the baseline physical conditions by which a lead agency determines whether an impact is significant. An existing conditions baseline may not include hypothetical conditions, such as those that might be allowed, but have never actually occurred, under existing permits or plans. However, a lead agency has discretion in determining the appropriate "existing conditions" baseline, including considering historical conditions or projected future conditions provided these are supported by substantial evidence in the record. A lead agency may rely solely on a projected future conditions baseline (beyond the date of project operations) only if it demonstrates with substantial evidence that use of existing conditions would be either misleading or without informative value to decision makers and the public. The Final EIR/EIS summarizes existing baseline conditions that could be affected by the project, including their regional context, based on the physical environmental conditions in 2016 when the environmental analysis was begun. This provides the basis for the evaluation of the impacts of the project alternatives. For some topic areas (e.g., transportation, air quality, energy), the EIR/EIS also includes additional discussion of the impacts of the project alternatives in the opening year of HSR operations, as described more specifically in each individual section. Please refer to Section 3.1.5.4, Methods for Evaluating Impacts, through Section 3.1.5.6, Environmental Consequences, of the Final EIR/EIS for more details regarding the methods for evaluating impacts.

NEPA and CEQA also require examination of a project's cumulative impacts (i.e., a project's impacts considered in conjunction with impacts of other past, present, and reasonably foreseeable projects causing related impacts). Section 3.18, Cumulative Impacts, evaluates cumulative impacts for each resource and considers the project's contribution to any cumulative impact. For the cumulative impacts analysis in Section 3.18 of the EIR/EIS, future projects were considered in the analysis if they were part of an adopted plan (e.g., regional transportation plans, regional transportation improvement plans, local long-range transportation plans, local land use general and specific plans) or meet any of the following conditions:

- Applications for project entitlements or construction are pending with a government agency.
- The project is included in an agency's budget or capital improvement program.
- The project is a reasonably foreseeable future phase of an existing project.
- The project is reasonably foreseeable to occur within the 2040 planning horizon for the HSR system.

17.2.3.1 Brisbane Baylands

Brisbane Baylands is a 660-acre parcel of land in Brisbane east of Bayshore Boulevard owned by Baylands Development, Inc. (formerly Universal Paragon Corporation). There have been several proposals to develop the site, none of which have been approved by the City of Brisbane. The earliest plan was submitted by the developer in 2005 and updated significantly in 2011 as part of the *Draft Brisbane Baylands Specific Plan* (City of Brisbane 2011). The Baylands was the subject of a Program EIR prepared by the City of Brisbane, which evaluated four different concept plans, and was certified by the Brisbane City Council in July 2018 (City of Brisbane 2018). In November 2018, the City of Brisbane and the city's voters approved a General Plan Amendment that allows

up to 2,200 dwelling units, 6.5 million square feet of new commercial development, and up to 500,000 square feet of hotel development in the Brisbane Baylands area. A revised Brisbane Baylands Specific Plan is under preparation to reflect the approved General Plan Amendment and the City of Brisbane will prepare a new EIR for the Specific Plan, in part because of substantial differences between the development currently proposed relative to the development evaluated in the Program EIR. The NOP for the Brisbane Baylands Specific Plan EIR was released on February 20, 2020.

Baseline Analysis for the HSR Project

Because the Brisbane Baylands Specific Plan and a proposed Brisbane Baylands development was not part of the existing environmental conditions as of 2016 when the Project Section environmental analysis was initiated, and because it was also still a pending proposed project when the Draft EIR/EIS was circulated for public review, it is not included in the existing conditions environmental baseline or the future environmental conditions considered in some resource topics. Projects are considered speculative and not included in the environmental baseline until the project has received final approvals. Although neither the Brisbane Baylands Specific Plan nor a proposed Brisbane Baylands development is included in the environmental baseline, the approved Brisbane 2018 General Plan Amendment is considered in the impact analysis on planned land uses in Section 3.13, Station Planning, Land Use, and Development, of the Draft EIR/EIS, to assess whether increased noise, light, and glare from project operations would result in permanent alteration of planned land use patterns in the Brisbane Baylands.

Cumulative Analysis for the HSR Project

The cumulative impacts analysis considered the proposed changes to zoning and land use designations at the Brisbane Baylands site, consistent with the 2018 Brisbane General Plan Amendment approved by the city's voters, when assessing the potential contribution of the project to cumulative impacts because the zoning and land use designations are part of an approved plan (the 2018 Brisbane General Plan Amendment) and are therefore considered reasonably foreseeable, whereas there is no approved "Baylands Development" that could be analyzed without speculation. The General Plan Amendment identifies land use designations, which are informing a proposed specific plan that the City of Brisbane may or may not adopt, and in turn guides specific development that the City may or may not approve. Consideration of the 2018 General Plan Amendment enables broader-scale analysis of prospective cumulative impacts related to certain topics. However, because the 2018 General Plan Amendment neither approves any specific development project nor provides any particular land use entitlement, the cumulative analysis of topics such as air quality or noise (which hinge on specifics such as the locations of sensitive receptors, building footprints, and similar factors) would be speculative. For example, the 2018 General Plan Amendment does not prescribe how buildings may be oriented in relation to the existing rail corridor, the mix of uses within such buildings, or other similar specific factors that would allow that type of specific analysis without speculation, and neither CEQA nor NEPA require an analysis based on speculation.

17.2.3.2 Geneva Avenue Extension and Geneva-Harney Bus Rapid Transit Project

The Geneva Avenue Extension is a conceptual transportation project that was proposed as part of a multijurisdictional San Francisco-San Mateo County transportation planning effort (San Francisco County Transportation Authority 2013). This project would extend Geneva Avenue from Bayshore Boulevard to the new proposed U.S. Highway (US) 101 Candlestick Point Interchange, connecting to Harney Way, and including a grade-separated Caltrain crossing. This new local street connection would provide access to US 101 from Brisbane Baylands as well as existing adjacent neighborhoods that would use the new street as a more direct route to US 101 than existing routes. The design would accommodate six travel lanes, two bicycle lanes, sidewalks, and potentially bus rapid transit (BRT) exclusive lanes as part of the related Geneva-Harney BRT project. The Geneva-Harney BRT project would operate from the proposed Hunters Point Shipyard Transit Center to the Balboa Park BART Station, by way of the Geneva Avenue Extension, and would connect to the Bayshore Caltrain Station.

Baseline Analysis for the HSR Project

For the purposes of the EIR/EIS, the Geneva Avenue Extension and the related Geneva-Harney BRT project are not included in the environmental baseline. While both projects have been considered at a conceptual level, they have not undergone detailed design or environmental review resulting in project approvals. The Geneva Avenue Extension and the related Geneva-Harney BRT project are included in *Plan Bay Area 2040* (Association of Bay Area Governments and Metropolitan Transportation Commission [MTC] 2017). The plan includes $17 million of funding for the planning and environmental phase of the Geneva Avenue Extension and notes that construction funding would need to be identified for the project to move forward. Because these projects are not yet approved, nor do they have dedicated funding, their inclusion as part of the environmental baseline is not supported by substantial evidence.

Cumulative Analysis for the HSR Project

The Geneva Avenue Extension and the related Geneva-Harney BRT project are considered in the cumulative impacts analysis because they were included in an adopted regional transportation plan. Additional discussion of these projects has been added to the cumulative analysis in the Final EIR/EIS.

17.2.3.3 Diridon Integrated Station Concept and the Google Development at the San Jose Diridon Station

The San Jose Diridon Station is a focal point for a complex and dynamic set of land use planning processes, undertaken by different entities and proceeding on independent timetables. The Authority intends to work both with the DISC partner agencies (regarding advancing DISC) and the City of San Jose and Google (regarding the Google project) to seek feasible ways to advance the independent pieces of the San Jose Diridon Station land use planning puzzle: the HSR project, DISC, and the Google project.

DISC is being considered through a distinct and separate planning and environmental review process. The HSR project would not preclude the implementation of DISC. The Authority is one of the DISC agency partners and is committed to working with the other DISC agency partners to find mutually agreeable solutions to allow both HSR and DISC projects to be implemented.

As stated in Section 2.1, Introduction, of the Draft EIR/EIS, the DISC is a separate ongoing multiagency planning process. Decisions about future changes to the San Jose Diridon Station and the surrounding Caltrain-owned rail infrastructure and corridor are the subject of multiple planning and agreement processes; DISC planning is proceeding independently of the environmental process for the HSR project. The Authority is involved in the DISC planning process along with the City of San Jose, Santa Clara Valley Transportation Authority (VTA), and Caltrain (referred to as the DISC partner agencies). Discussions between the DISC partner agencies have identified that the DISC Concept Plan will be planned, environmentally reviewed, and approved separately from the HSR project, the BART extension, and the Google development plans. A DISC concept layout was developed in 2019 and was accepted by the City of San Jose, the Authority, and Caltrain in February 2020. Preliminary design of the DISC concept layout is necessary before environmental review can commence.

The DISC planning effort seeks to address the needs of the City of San Jose, BART, VTA, Caltrain, Capitol Corridor, Altamont Corridor Express (ACE), and Amtrak, as well as local development adjacent to the station. The DISC planning effort seeks to primarily address the station and its interface with surrounding land use, including tracks and platform configuration, station location and layout, access to the station by various transportation modes (such as walking and bus), connection from adjacent land use, and passenger flows to, from, and through the station. In contrast, the HSR project, as defined in the Draft EIR/EIS, is intended to only address the extension of HSR service from the San Jose Diridon Station to San Francisco. As such, DISC is not necessary to achieve the purpose and need or the goals and objectives of the HSR project and will include infrastructure and improvements beyond those needed for the HSR project. This is the primary reason that DISC is part of a separate planning process from the HSR

project. As the Authority is one of the DISC partner agencies, the DISC can be planned in such a way that HSR service to the San Jose Diridon Station can be accommodated. The DISC may differ from the station design included in the Draft EIR/EIS. The environmental consequences of implementing DISC, including any changes to the HSR project, will be analyzed and disclosed in a subsequent environmental review process (as well as any applicable review conducted by the Authority).

The Google project, which is also referred to as the "Downtown West Mixed Use Plan," is a proposal to redevelop approximately 80 acres of land adjacent to the San Jose Diridon Station, including 6.5 million to 7.4 million square feet of office space; 3,000 to 5,900 units of housing; 300,000 to 500,000 square feet of active uses (e.g., retail, cultural, arts); 100,000 square feet of event space, hotel use, and limited-term corporate accommodations; infrastructure; utilities; and public space. The project is going through a separate environmental review and entitlement process with the City of San Jose. Google submitted a development application on October 10, 2019. The City of San Jose released a Draft EIR for the Google project on October 7, 2020. The City of San Jose approved the project in May 2021.

The Authority will coordinate with Google as their project and the HSR project proceeds, including sequencing for construction. There are conflicts in certain areas between the full build of the Google project and the HSR project alternatives. With the HSR project, Google will not be able to build on all of the areas they propose to build on. Alternative B would utilize substantially more of the land proposed by Google for development compared to Alternative A. However, the conflicts are only for certain areas and with either Alternative A or B, there will remain substantial areas on which Google can realize most of their development ambitions.

Baseline Analysis for the HSR Project

Neither the DISC nor the proposed Google project were considered as part of the environmental baseline for the HSR project because neither project had been approved by the relevant agencies at the time the environmental analysis was completed for the Draft EIR/EIS between 2016 and early 2020.

While a conceptual layout has been developed for DISC (as of 2021), there is substantial additional work necessary that must be completed in order to commence with the environmental review. Since DISC is not yet approved or constructed, it does not comprise the environmental baseline for the environmental analysis of the HSR project.

While the Google project was approved in May 2021, it has not been constructed or even commenced construction, and thus it does not comprise the environmental baseline for the environmental analysis of the HSR project.

Cumulative Analysis for the HSR Project

Since the DISC is still a concept under development and lacks sufficient detailed design or environmental analysis, it would be premature and speculative to consider DISC in the cumulative analysis for the HSR project.

The cumulative analysis in the Final EIR/EIS has been updated with additional information available from the May 2021 Final EIR for the Google project. The Draft EIR/EIS for the HSR project included potential buildout of the Diridon Station Area Plan, and thus already reflected cumulative impacts of land use development around the San Jose Diridon Station in combination with the HSR project. The additional information from the May 2021 Final EIR for the Google project included in the Final EIR/EIS for the HSR project provides a description of details concerning the shape of the proposed development around the San Jose Diridon Station and the general nature of cumulative impacts but has not resulted in new significant or substantially more severe impacts of the HSR project compared to the impacts described in the Draft EIR/EIS.

17.2.4 FJ-Response-GEN-4: Consideration of 2040 Caltrain Service Vision and Caltrain Business Plan

Commenters expressed concern and questioned why the Draft EIR/EIS does not analyze the impact of the HSR project on the Caltrain Business Plan, including the 2040 Caltrain Service Vision.

The Peninsula Corridor Joint Powers Board (PCJPB), which is the agency that is responsible for Caltrain, has been engaging in a planning process from 2018 to 2020 to develop a Caltrain Business Plan, including defining a long-term vision (the 2040 Caltrain Service Vision; hereafter the "Caltrain Service Vision"). The Caltrain Business Plan identifies the funding and implementation steps to realize the long-term vision.

The Authority supports expanded and improved Caltrain service and has worked and will continue to work with Caltrain to support the incremental service improvements over time while accommodating the HSR service within the Caltrain corridor previously agreed upon between Caltrain, other transportation agencies, and the Authority. The development of the Caltrain Business Plan is a separate planning process necessary to achieve Caltrain's long-term goals but is not necessary to achieve the goals of the HSR project. As explained below, the Caltrain Business Plan does not represent an approved and fully funded "project" and thus does not constitute the baseline conditions for environmental impact analysis for the HSR project. In addition, the specific physical improvements associated with the Caltrain Business Plan have not yet been designed and thus there is insufficient detail to include them in the cumulative analysis for the Final EIR/EIS.

Separate Planning Process from the HSR Project

The Caltrain Business Plan (including the Caltrain Service Vision) seeks to provide increased Caltrain service per peak hour per direction (pphpd) beyond the 5 trains pphpd at present and up to 6 trains pphpd after completion of PCEP. The Authority and the PCJPB, along with seven other transportation agencies, agreed in 2012 to implement blended service along the Caltrain corridor to include up to 6 Caltrain trains pphpd and up to 4 HSR trains pphpd. The Authority has also provided substantial funding ($713 million) for implementation of the PCEP, which is part of the agreements between the Authority, the PCJPB, and other transportation agencies. As it is a signatory to that agreement, Caltrain is obligated to accommodate the agreed-upon HSR service plan going forward, and this is recognized in the Caltrain Service Vision. Caltrain has also recognized the HSR service plan in the Caltrain Service Vision.

The Caltrain Service Vision includes 8 trains pphpd for 2020 between San Francisco and Tamien, an increase in off-peak and weekend frequencies, and accommodation of HSR and other passenger and rail services in accordance with existing agreements between the PCJPB, the Authority, and other transportation agencies. The Caltrain Service Vision was adopted by the PCJPB in October 2019. In order to achieve the Caltrain Service Vision, PCJPB has conceptually identified that certain improvements will be required, including grade separations, terminal improvements, rail infrastructure and system updates, station improvements, and fleet upgrades. The total cost of these improvements is estimated as $23 billion. Operating and maintenance costs would also increase, but the percentage farebox recovery is expected to be similar to existing operations (PCJPB 2019a).[2] At present, the Caltrain Service Vision is not fully funded, but PCJPB is developing 10-year funding plans for the initial development and a funding and revenue strategy for the full Caltrain Service Vision. Environmental review was not completed for the Caltrain Service Vision (as a planning study only, CEQA review was not required).

While the Caltrain Service Vision has been adopted, Caltrain continues to work on the Caltrain Business Plan itself, which is not yet finalized as of March 2022. Current activity includes development of funding plans and strategy; development of an equity, connectivity, recovery, and growth framework; and analysis of connections to other systems and station access options. A

[2] Similar to farebox recovery prior to the COVID-19 health emergency.

sales tax initiative on the November 2020 ballot for Caltrain was approved to establish an ongoing funding source for Caltrain. This sales tax would raise about $108 million annually for 30 years, which would correspond to $3.24 billion, compared to the estimated $23 billion necessary to fully implement the Caltrain Service Vision and the Caltrain Business Plan.

The Caltrain Business Plan is not necessary to achieve the purpose and need/goals and objectives of the HSR project and will include infrastructure and improvements beyond those needed for the HSR project. This is the primary reason that the Caltrain Business Plan is part of a separate planning process from the HSR project and that any improvements to advance the Caltrain Business Plan should be part of PCJPB's separate environmental review. The environmental consequences of PCJPB's implementation of the Caltrain Business Plan will be analyzed and disclosed in a subsequent environmental review process.

The HSR Project Would Not Preclude the Caltrain Business Plan

The HSR project would not preclude the implementation of improvements necessary to fulfill the Caltrain Business Plan. None of the physical improvements included in the HSR project would preclude any of the improvements conceptually identified as necessary to implement the Caltrain Business Plan (including passing tracks, station modifications, or other improvements). Although some of the Caltrain Business Plan improvements may alter some improvements included in the current HSR project description, the environmental effects of those improvements can (and should) be analyzed in subsequent environmental review for implementation of the Caltrain Business Plan, and the Authority will work with PCJPB to facilitate those improvements (including conducting applicable environmental review of any adjustments to the HSR project) while also providing the agreed-upon HSR service levels.

Baseline for EIR/EIS Analysis

Refer to Section 17.2.3, FJ-Response-GEN-3: Consideration of Plans and Projects, for an explanation of the how the environmental baseline was established for the EIR/EIS.

PCJPB's 2015 EIR for the PCEP (PCJPB 2015) reviewed the environmental consequences for 6 Caltrain trains pphpd. The San Francisco to San Jose Project Section Final EIR/EIS reviews the environmental consequences of blended service, including 6 Caltrain trains plus 4 HSR trains pphpd, and evaluated blended service at the level agreed to by PCJPB, the Authority, and other transportation agencies. PCJPB will be responsible for environmental review of any future improvements specifically proposed to advance the Caltrain Business Plan. This approach allows improvements to be environmentally reviewed at the time specific capital projects are identified, designed sufficiently to allow for an adequate environmental analysis, and considered for approval. Each subsequent environmental review must consider the existing conditions and approved projects when considering the impacts of a project under current environmental review. The 2015 PCEP EIR did not review the impacts of HSR service at the time, even though the Authority had adopted Business Plans and even though there had been several Program EIR/EISs for the proposed HSR system including in the Bay Area. The 2015 PCEP EIR did not consider the HSR project to be part of the baseline because the HSR project had not been approved following complete environmental review, the specific design of the improvements necessary for HSR were not available at the time, and HSR improvements were not necessary to complete the Caltrain electrification (which has independent utility from the HSR improvements). The San Francisco to San Jose Project Section Final EIR/EIS does not evaluate the impacts of the Caltrain Business Plan (including the Caltrain Service Vision) because the Caltrain Business Plan does not represent an approved "project", is not fully funded, the specific design of contemplated improvements has not been done, and the Caltrain Business Plan improvements are not necessary to provide HSR service (which has independent utility from the Caltrain Business Plan).

While Caltrain Business Plan development to-date has articulated the need for certain improvements, including grade separations, terminal improvements, rail infrastructure and system updates, and station improvement and fleet upgrades, these improvements have not yet been designed or defined in detail sufficiently to support environmental analysis. There is substantial

additional work necessary that must be completed in order to commence the environmental review of the potential improvements associated with Caltrain Business Plan. Since the Caltrain Business Plan is not yet approved, is a planning study, is not funded, and the improvements are not defined in detail, the Caltrain Business Plan does not constitute the environmental baseline for the environmental analysis of the HSR project.

Cumulative Analysis

The Caltrain Business Plan had not been adopted as of March 2022. No environmental analysis has been conducted for the Caltrain Business Plan. The specific physical improvements have not yet been designed, and full funding has not been identified yet. As such, the Caltrain Business Plan (including the Caltrain Service Vision) is not "reasonably foreseeable" as defined under NEPA or CEQA, and the information necessary to include them in a specific analysis of the cumulative impacts of the HSR project is not available.

17.2.5 FJ-Response-GEN-5: Impact Avoidance and Minimization Features

Several commenters raised concerns about the Authority's reliance on impact avoidance and minimization features (IAMF) to reduce or avoid many of the project alternatives' adverse environmental effects. These commenters stated:

- *The IAMFs should not be considered part of the project because doing so compresses the analysis of impacts and mitigation in violation of the CEQA case Lotus v. Department of Transportation (2014) 223 Cal.App.4th 645.*
- *Many of the IAMFs are improperly deferred mitigation that lack specific performance standards and mitigation actions.*

Contrary to the commenters' concerns, the San Francisco to San Jose Project Section Final EIR/EIS appropriately relies on IAMFs as project components in compliance with CEQA and NEPA requirements.

The IAMFs are properly included as part of the project alternatives: As explained in Section 2.6.2.3, High-Speed Rail Project Impact Avoidance and Minimization Features, and in Volume 2, Appendix 2-E, Project Impact Avoidance and Minimization Features, the Authority committed to incorporating features into the project design to avoid or minimize the environmental impacts of the statewide HSR system to the maximum extent possible as part of its Tier 1 EIR/EISs and decisions (Resolution #HSRA 05-01; Resolution #HSRA 12-17). The FRA recognized this commitment in its Tier 1 decisions (FRA 2005 Record of Decision [ROD], §9.1; FRA 2008 ROD, §9.1). The Tier 1 commitment was specifically intended to recognize that potential adverse environmental impacts of the statewide HSR system could be avoided entirely, or greatly minimized, through careful planning, thoughtful design, compliance with laws and regulations, and reliance on established industry standards. Consistent with the Tier 1 decision, the Authority developed the IAMFs and integrated them into its Tier 2 projects, including the San Francisco to San Jose Project Section. The IAMFs are standard conditions for design and construction that reflect the Authority's commitment to design the least-impacting project possible and ensure consistency in approach across all HSR project sections.

The Authority, as the CEQA lead agency, has discretion to define the project, which includes consideration of design elements that can lessen or avoid adverse environmental impacts. The incorporation of IAMFs as project design features is also consistent with CEQA's policy of encouraging agencies to protect the environment in carrying out their missions (California Public Resources Code [Cal. Public Res. Code] §§ 21000, 21001, subd. (f).). Further, under NEPA, a key component of alternatives development is early consideration of practices to avoid, minimize, rectify, and compensate for impacts that are included as part of project design. The Council on Environmental Quality (CEQ) encourages agencies to incorporate such practices as integral components of project design before analyzing the significance of a project's environmental impacts, recognizing that this can lead to an environmentally preferred outcome (Final Guidance for Federal Departments and Agencies on the Appropriate Use of Mitigation and Monitoring and Clarifying the Appropriate Use of Mitigated Findings of No Significant Impact, 76 *Federal Register*

[Fed. Reg.] 3843) In consideration of this guidance, the FRA encouraged the incorporation of IAMFs as an integral part of the project design. Thus, the incorporation of the IAMFs as part of the project alternatives is consistent with the Authority's obligations under CEQA and NEPA.

The EIR/EIS impacts analysis explains the effectiveness of the IAMFs and how they relate to the applicable CEQA threshold of significance: Because the Authority has committed to implementing the IAMFs on a programmatic level as standard requirements for project design and construction, they are included, as applicable, under both project alternatives for purposes of the environmental impact analysis. Each resource section in Chapter 3, Affected Environment, Environmental Consequences, and Mitigation Measures, in the EIR/EIS provides a list of the applicable IAMFs relevant to the resource, and the individual impact discussions in the Environmental Consequences section describe the mechanisms by which the IAMFs will avoid and minimize impacts.

For CEQA purposes, each individual impact section describes whether the project alternatives result in significant impacts as evaluated against the relevant threshold of significance, and for impacts determined to be potentially significant, each section describes the feasible mitigation measures to further avoid, minimize, rectify, eliminate, or compensate for the impact. This analysis describes the effectiveness of the IAMFs in avoiding or minimizing impacts and does not omit discussion of the relevant thresholds of significance, and inclusion of IAMFs as part of the project does not interfere with disclosure of the project's impacts or consideration of mitigation measures. The mitigation measures discussed in the Final EIR/EIS differ from the IAMFs in that they represent proposed subsequent actions that can feasibly mitigate site-specific environmental impacts of the project that remain after incorporation of the IAMFs. This analysis provides the necessary public disclosure function that CEQA and NEPA require.

The IAMFs are not "improperly deferred mitigation measures" as the commenters state: The IAMFs reflect standard requirements for design and construction and standard procedures to be followed during construction. These will be incorporated into the project delivery specifications and will result in a tangible avoidance or minimization of environmental impacts as described in the impact analysis sections. Many of the IAMFs reflect compliance with regulatory requirements (e.g., AQ-IAMF#1, controlling fugitive dust), or industry-recognized performance standards (e.g., EMF/EMI-IAMF#1), which the Authority will impose on the selected construction contractor. Other IAMFs reflect the Authority's established guidelines, direction, and practices to avoid or minimize impacts for non-regulatory topics such as aesthetics. In response to comments, the Authority has modified the language of some of the IAMFs to better clarify these requirements, procedures, and standards in Volume 2, Appendix 2-E in the Final EIR/EIS. The Authority will implement the IAMFs during project design and construction of the Project Section through inclusion in the project section design-build contracts and engineering plans as part of detailed engineering design. This would be done after the Authority approves the project, as described in the Final EIR/EIS. In addition, the Authority will track IAMFs through planning, design, construction, and operation as part of contract compliance.

17.2.6 FJ-Response-GEN-6: Level of Detail in Analysis and Mitigation

Some comments have suggested an alleged lack of detail in the project description, analysis, and mitigation measures.

17.2.6.1 Level of Detail in Second-Tier Impact Analyses

Some comments suggest the project description lacks detail to analyze impacts in sufficient detail for a second-tier or project-level EIR/EIS. The EIR/EIS analyzes the environmental impacts, both adverse and beneficial, of the HSR project between San Francisco and San Jose at an appropriate level of detail for a second-tier environmental document. This EIR/EIS is based on detailed project planning and design specific to the Project Section. The impacts analysis provides site-specific information about the potential environmental impacts of the San Francisco to San Jose Project Section of the HSR system.

The HSR project would be constructed as a *design-build* project. That is, the final engineering design would be completed by the contractor chosen to build the project. Accordingly, this EIR/EIS is based on preliminary engineering design. The Final EIR/EIS includes a thorough description of the project alternatives that describes all project components and other information at a level of detail needed to disclose the environmental impacts, consistent with CEQA and NEPA requirements. Neither CEQA nor NEPA requires a final design or even near-final design as a prerequisite for environmental analysis. In addition, the use of a preliminary level of engineering design is common in large transportation infrastructure projects, particularly design-build projects, where the environmental analysis process occurs before completion of final engineering design.

Based on the detailed project definition, the Final EIR/EIS provides a second-tier project-level environmental analysis of implementing the HSR project in the San Francisco to San Jose Project Section of the statewide system. The EIR/EIS includes a detailed discussion of the environmental baseline in each resource area based on extensive research, including on-site surveys of parcels where the property owner provided permission for access. Where permission for an on-site survey was not granted, the Authority used the best available alternative methods to disclose all that is reasonably possible about existing conditions. The impacts analysis in each resource area focuses on the direct and indirect impacts in San Francisco, San Mateo, and Santa Clara Counties where project infrastructure would be constructed. The cumulative impacts analysis examines environmental resource areas more broadly, depending on the resource area, but in doing so provides the appropriate level of detail for a second-tier project analysis.

For a linear project crossing approximately 50 miles in distance across three counties, it is not reasonable to include descriptive parcel-by-parcel impacts discussion in the main text of the EIR/EIS. To do so would result in an environmental document that would be so large and unwieldy that it would not serve its information value. For this reason, and consistent with the focus of both CEQA and NEPA that an EIR/EIS serve as an informational tool for the public and decision makers, the impacts analysis in Volume 1, Report, of the EIR/EIS summarizes technical information at a sufficient level of detail to allow a full assessment of the significant environmental impacts of the project. Volume 2, Technical Appendices, provides additional details on the impacts of the project alternatives and affected parcels; the environmental review process; and resource-specific background information, data, and other evidence supporting the analyses. Volume 3, Preliminary Engineering Plans, presents the design drawings, including trackway and roadway crossing designs, which provides information at a parcel-by-parcel level of detail. The technical reports, which the Authority has made available upon request, provide more detailed technical analyses and data than included in the main volumes of the EIR/EIS.

17.2.6.2 Level of Detail in Second-Tier Mitigation Measures

Some comments question the sufficiency of the mitigation measures for a second-tier EIR/EIS. The EIR/EIS mitigation measures are sufficient. CEQA requires an EIR to identify the significant impacts of a project on the environment and to identify measures to mitigate or avoid those significant impacts, and for a public agency to adopt the mitigation measures as part of the project approval if they are determined to be feasible (Cal. Public Res. Code § 21002.1). NEPA requires that an EIS identify all practicable means to avoid or minimize harm, and that mitigation measures be discussed in sufficient detail to ensure that environmental consequences have been fairly evaluated (40 C.F.R. § 1502.16(h), 1505.2(c); *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 352 [1989]).

For CEQA, the Project Section EIR/EIS analysis describes whether the project impacts are significant as measured against specific thresholds of significance based on Appendix G of the CEQA Guidelines. For impacts that are identified as significant under CEQA or adverse under NEPA, the analysis identifies mitigation measures, which are actions taken to avoid, minimize, rectify, reduce, eliminate, or compensate for an adverse physical change in the environment. Many of the mitigation measures included in the EIR/EIS are refinements of programmatic mitigation strategies, while others are newly developed and specific to this EIR/EIS.

Some comments suggest that the Draft EIR/EIS inappropriately defers the identification of the detailed mitigation measures necessary to address the significant effects that may result from

construction of the Project Section. The EIR/EIS includes an extensive set of enforceable mitigation measures as necessary to address significant impacts. For some resource areas, such as biological and aquatic resource impacts, where the specific site for implementing a mitigation measure is not yet identified, the mitigation measures provide specific performance standards to be achieved. Performance standards establish specific measurable parameters that must be achieved by a mitigation measure. Under CEQA, where specific details of a mitigation measure are impractical or infeasible to include during the environmental review process, an EIR may take a phased approach to the development of specific mitigation. To do so, the agency must commit itself to the mitigation, adopt specific performance standards the mitigation will achieve, and identify the types of potential actions that can feasibly achieve that performance standard that will be considered, analyzed, and potentially incorporated in the mitigation measure (14 Cal. Code Regs. § 15126.4(a)(1)(B)). The mitigation measures identified in the EIR/EIS meet these requirements.

Consistent with the Authority's practice for the other HSR project sections, the Authority will consider adopting the mitigation measures identified in this EIR/EIS in conjunction with its decision to approve the Project Section. If the Authority approves the Project Section, the design-build contractor will reach a level of final design and, in conjunction with necessary permit requirements, the Authority will work closely with regulatory agencies and partner agencies to identify specific mitigation sites and how adopted mitigation measures with specific performance standards will be achieved. Specifically, the Authority will pursue necessary permits and approvals from other agencies, such as the U.S. Army Corps of Engineers and California Department of Fish and Wildlife, as described in Chapters 1 and 2 of the EIR/EIS. These permitting processes, including requirements for a compensatory mitigation plan as a prerequisite to issuance of the Section 404 permit, ensure the enforceability and success of the mitigation measures with performance standards.

17.2.7 FJ-Response-GEN-7: Effects of COVID-19 on HSR Ridership

Some comments expressed concerns that societal changes due to the effects of the COVID-19 pandemic, including the shift to working from home, would lead to reduced demand for HSR travel and lower ridership than the forecasts used in the Draft EIR/EIS.

Despite the dramatic reduction in transit and intercity train travel since March 2020 due to the pandemic, the Authority is confident that the ridership forecasts for the HSR system discussed in Section 2.7.1, Travel Demand and Ridership Forecasts, of the Draft EIR/EIS remain valid due to population growth and the consequent increase in traffic congestion, and the anticipated short-term nature of the effects of the pandemic on transit and intercity train travel.

As discussed in Section 1.2.4.1 of the Draft EIR/EIS, California's population is growing rapidly and, unless new transportation solutions are identified and implemented, traffic will become more congested and airport delays will continue to increase. The proposed HSR system would provide lower passenger costs than air travel for the same city-to-city markets and offer service competitive with automobile travel. It would increase mobility while reducing air pollution, decreasing dependence on fossil fuels, and reducing GHG emissions. It would also promote sustainable development in the areas near the stations compared to existing trends. By moving people more quickly and at lower cost than air travel, the HSR system would boost California's productivity and enhance its economy.

As discussed in Section 1.2.4.1, in 2016 the California Department of Finance projected that between 2015 and 2040, California's population would increase by more than 8 million residents, from approximately 39 million to 47 million people. The state's forecasted population, however, has declined from earlier forecasts. For example, the 2008 Business Plan Ridership and Revenue Forecast document stated, "*between 2000 and 2030, population is forecast to grow by 42% to 48 million,*" which would have the state's population reach forecasted population about 10 years earlier than the 2016 forecasts. Like unforeseen changes in the financial markets, forecasting population growth also has uncertainty in the near term. For this very reason, each of the Authority's business plans is prepared using updated data to prepare the new ridership and

revenue forecasts. Ridership forecasts and service plans are adjusted to ensure the long-term economic soundness of operation of the California HSR System.

The near-term effects of the COVID-19 pandemic, however, caused a dramatic reduction in intercity train travel ridership. The federal government declared the coronavirus a national emergency on March 13, 2020, and California was the first state to issue a mandated stay-at-home order, requiring California residents to stay at home, except under limited circumstances, such as for an essential job or to shop for essential purposes (California Executive Order [EO] N-33-20). The State of California, along with the country, quickly plunged into a recession with substantial job losses, high unemployment, and a near cessation of all regional air travel and leisure travel, and many people switched to working from home. The transportation sector was one of the first sectors of the economy to be affected as people reduced driving and use of public transit, trains, and airplanes.

In the San Francisco Bay Area (Bay Area), BART experienced substantial drops in ridership at the start of the COVID-19 pandemic. In February 2020, the month before the state's stay-at-home order was issued, the total number of origin-destination trips on BART was approximately 9 million. After the order was issued in March 2020, ridership dropped to just over 4 million, and then dropped to just 630,000 in April (BART 2020). However, BART ridership began to return with the initiation of state- and federal-sponsored vaccination programs beginning in early 2021. Ridership increased to 2 million by June 2021, when the vaccination rate of many Bay Area counties had reached 70 percent or better, companies were making plans to ask employees to return to work, and companies began hiring again (BART 2021). In addition, business and leisure travel increased during the spring and summer months.

Caltrain service from San Francisco to San Jose and Gilroy experienced a similar trend with pre-pandemic weekday Caltrain ridership averaging about 65,000 passengers and falling to a low of 1,500 riders after the stay-at-home order was issued. The ridership, however, increased in June 2020 to approximately 3,200 riders per day (Caltrain 2020a). More recent ridership statistics have not been published on the Caltrain webpage; however, Caltrain financial assumptions assumed ridership would return to 40–50 percent of pre-pandemic levels by January 2022 (PCJPB 2021).

Amtrak services in California also experienced a similar trend, with a substantial drop in ridership at the start of the pandemic. Between 2014 and 2019, Amtrak ridership in California increased from about 10.5 million to 11.5 million passengers per year (Rail Passengers Association 2020). This increase included the four national network long-distance trains (California Zephyr, Coast Starlight, Southwest Chief, and Sunset Limited) and the three state-supported routes (Capitol Corridor, Pacific Surfliner, and San Joaquins). However, after the stay-at-home order was issued, both the long-distance routes through the state and the state-supported routes experienced declines. Overall, the long-distance routes declined by 39 percent and the state-supported routes declined by 49 percent when comparing fiscal year (FY) 2019 and FY 2020 ridership (Railway Age 2020). By June 2021, however, Amtrak was increasing services on most of these routes due to demand returning to pre-pandemic levels, federal financial supports, and seasonally driven demand that occurs during the summer months.

Detailed statistics for the Amtrak Capitol Corridor route, managed by six local transit agencies and serving the Bay Area, show how dramatically the pandemic affected ridership. Before the pandemic, from December 2019 through February 2020, ridership exceeded 140,000 (Capitol Corridor Joint Powers Authority [CCJPA] 2021a). In March 2020, ridership plunged to less than 65,000, reaching its lowest ridership in April 2020 at less than 7,200—a 95 percent reduction from a year earlier. Between June 2020 and June 2021, however, ridership on the Capitol Corridor route slowly increased to nearly 39,000. Unemployment in the counties served by the Capitol Corridor, which had increased to 12 to 15 percent in April 2020 (California Employment Development Department 2021), has continued to hover at nearly twice the pre-pandemic rates of unemployment between November 2020 and June 2021. This indicates some time is still required before services could return to pre-pandemic operation service levels. The *Capitol Corridor Joint Powers Authority Draft Business Plan FY 2021–2023* states the goal is to return to

full service by the end of 2021, but it acknowledges adjustments may be needed based on changing public health and financial conditions (CCJPA 2021b).

Although recent ridership numbers are still far below pre-pandemic levels, prior national economic recessions similarly resulted in reduced ridership that took several years to recover to pre-recession levels. An analysis of BART daily ridership for the past several decades shows this occurred during the 1990–1991, 2001, and 2007–2009 recessions (BART 2016). Each time, ridership recovery closely paralleled employment gains within the BART District, whereas Caltrain ridership, with more limited service in the Bay Area, has recovered more slowly in prior recessions, with ridership not exceeding the pre-recession levels for these three historic recessions until 1996, 2007, and 2011, respectively. For the Amtrak Capitol Corridor route, ridership growth was flat during FY 2000–2001 and FY 2001–2002, and during the 2007–2009 recession, it took 3 years before ridership exceeded FY 2007–2008 levels (CCJPA 2021b). Transit and rail operators recognize these ties between ridership and employment and have made financial and service plan adjustments during the recovery periods.

Further, although the pandemic led to more employers offering broader telecommuting arrangement in certain sectors, the persistence of this trend is uncertain. Recent reporting suggests that many private sector companies and government agencies anticipate a return to in-office work for their employees in whole or in part. Therefore, it would be speculative to assume an overall reduction in ridership at this time based on this recent pandemic-induced trend.

The experience of BART, Caltrain's Peninsula Corridor, and Amtrak's Capitol Corridor routes during prior economic recessions suggests that transit and intercity train ridership will recover in time commensurate with employment gains and lower unemployment levels. Although the current pandemic has had a dramatic effect on public transit and railway ridership in the near term, the Authority does not anticipate that COVID-19 will significantly affect the need for, or travel demand associated with, the HSR system. With severe constraints for expansion of the existing transportation system, the demand for HSR train service will remain in the long term despite the near-term effects of the COVID-19 pandemic on the transportation system. Therefore, the ridership projections used by the Authority remain valid for the Purpose and Need of the project and the analysis of the project's anticipated impacts and benefits, and it would be speculative to revise the projections for purposes of the Draft EIR/EIS analysis based on recent near-term transit and railway ridership levels.

17.3 Alternatives Standard Responses

17.3.1 FJ-Response-ALT-1: Alternatives Selection and Evaluation Process

The Authority received comments questioning the alternative development process, including alternatives considered and reasons they were not carried forward. Multiple commenters expressed a preference for one of the alternatives over the others, opposed a particular alternative because of its impacts, or suggested the Authority study other alternatives.

17.3.1.1 Alternatives Analysis Process Requirements under CEQA and NEPA

An EIR/EIS is required to analyze the potential impacts of a range of reasonable alternatives (14 Cal. Code Regs. § 15126.6, 40 C.F.R. § 1502.14(a)). Under CEQA, an EIR must describe a range of reasonable alternatives to the project, or to the location of the project, that could feasibly accomplish most of the project's basic objectives, and avoid or substantially lessen any of the project's significant adverse effects, and evaluate the comparative merits of the alternatives (14 Cal. Code Regs. § 15126.6(a), (c)). The EIR must also evaluate a No Project Alternative (14 Cal. Code Regs. § 15126.6(e)). In determining the range of reasonable alternatives to be examined in the EIR, the lead agency must describe its reasons for excluding other potential alternatives. Under the "rule of reason," an EIR is required to study a sufficient range of alternatives to permit a reasoned choice (14 Cal. Code Regs. § 15126.6(f)). There is no requirement to study all possible alternatives. Further, an EIR must include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project, but does not require

alternatives to be evaluated at the same level of detail as the proposed project (14 Cal. Code Regs. § 15126.6(d)).

Under NEPA, the alternatives analysis "is the heart of the environmental impact statement" (40 C.F.R. § 1502.14). Pursuant to Section 14(*l*) of the FRA's Procedures for Considering Environmental Impacts, these include "all reasonable alternative courses of action which could satisfy the [project's] purpose and need" (64 Fed. Reg. 28546, May 26, 1999). An EIS prepared for NEPA must rigorously explore and objectively evaluate a reasonable range of alternatives along with the proposed action. Reasonable alternatives are those that may be feasibly carried out based on technical, economic, environmental, and other factors. The general rule under NEPA is that all alternatives carried forward in an EIS must be analyzed and discussed to the same level of detail. This is different from CEQA, which requires only enough information about the alternatives to allow for meaningful comparison. For the Project Section EIR/EIS, the more rigorous NEPA approach to alternatives evaluation was used rather than the CEQA approach. The EIR/EIS examines the range of reasonable alternatives to the proposed project, including the alternative of taking no action, to an equivalent level of detail.

17.3.1.2 Development of a Range of Alternatives

As described in Section 2.5, Alternatives Considered during Alternatives Screening Process, the 2005 Statewide Program EIR/EIS (Authority and FRA 2005) examined general HSR alignment alternatives, potential station locations, and a modal alternative. After completing the Statewide Program EIR/EIS, the Authority and FRA prepared a geographically focused program EIR/EIS, the *Final Bay Area to Central Valley High-Speed Train Program EIR/EIS* (Authority and FRA 2008), to identify corridor and station locations for the HSR connection between the Bay Area and the Central Valley. In 2008, the Authority and FRA selected a Pacheco Pass connection, with corridors and station locations to be further examined in Tier 2 environmental reviews. As a result of litigation, the Authority prepared additional programmatic environmental review for the Bay Area and the Central Valley section, and again selected the Pacheco Pass connection (in the *Bay Area to Central Valley Partially Revised Final Program EIR* [Authority 2012a]). These three Tier 1 decisions established the broad framework for the HSR system that serves as the foundation for the Tier 2 environmental review of individual project sections. Between San Francisco and San Jose, the existing Caltrain corridor was advanced for Tier 2 study. The station locations advanced for Tier 2 study included a station in downtown San Francisco, a potential mid-San Francisco Peninsula (Peninsula) station, an SFO Station at Millbrae, and a station at the San Jose Diridon Station.

The Authority and FRA began the project-level environmental review process in 2008. At that time, the proposed project was a fully grade-separated four-track system between San Francisco and San Jose with HSR sharing the corridor with Caltrain express commuter trains and accommodating continued Union Pacific Railroad (UPRR) freight train use of the corridor. With consideration of the public and agency comments received during the planning and initial scoping processes, various design options for the alternatives for HSR alignment, stations, and light maintenance facility (LMF) sites were considered, as detailed in the *Preliminary Alternatives Analysis Report for the San Francisco to San Jose Section* (PAA) (Authority and FRA 2010a), and the subsequent *Supplemental Alternatives Analysis Report for the San Francisco to San Jose Section* (SAA) (Authority and FRA 2010b). The proposed four-track system generated concerns from communities along the Caltrain corridor because of the perceived magnitude of impacts on environmental and community resources. In response to these concerns, the Authority and FRA suspended further work on the Project Section EIR/EIS in mid-2011 so that it could consider the potential to blend HSR and Caltrain operations within a smaller project footprint. In November 2011, in the Draft 2012 Business Plan, the Authority proposed blended operations for the Project Section north of Scott Boulevard, which would provide HSR service between San Francisco and San Jose on a predominantly two-track system shared with Caltrain.

In 2012, the Authority adopted the *California High-Speed Rail Program Revised 2012 Business Plan: Building California's Future* (2012 Business Plan), which concluded that, as allowed by law, the HSR project to be studied north of Scott Boulevard in the Project Section would operate as a

blended system (Authority 2012b). Other actions establishing the framework for blended operations along the Caltrain corridor included adoption of the MTC Resolution No. 4056 Memorandum of Understanding: High-Speed Rail Early Investment Strategy for a Blended System on the Peninsula Corridor (MOU)[3] (MTC 2012) and passage of Senate Bills (SB) 1029[4] and 557.[5] In May 2016, FRA rescinded the prior 2008 Notice of Intent (NOI) and the Authority rescinded the revised 2009 NOP for the Project Section, and FRA and the Authority issued a new NOI and NOP, respectively, to evaluate a predominantly two-track blended system.

The framework for pursuing a blended system in the Project Section provided the foundation for a new Tier 2 planning effort focusing on a predominantly two-track blended system utilizing existing Caltrain track and remaining substantially within the existing Caltrain right-of-way. This framework, combined with the spatial constraints of integrating with existing passenger and freight rail in an existing right-of-way, limited the range of potential alignment alternatives for the Project Section. Consequently, the alternatives development process for the blended system focused largely on blended system operations, including the utility of passing tracks,[6] and achieving the objectives of predictable and consistent operational service travel times for both HSR and Caltrain service, while also providing consistency with Prop 1A time requirements for system design.

The alternatives development and consideration process was iterative from 2009 to 2019, as illustrated on Figure 2-20 of the Final EIR/EIS and described in detail in Chapter 9, Public and Agency Involvement, of the Final EIR/EIS. The Authority solicited public and agency comments on the range of alternatives that should be studied in the EIR/EIS multiple times, including the initial EIR/EIS scoping period in 2009 and during PAA and SAA document preparation in 2010. After the blended system framework was established in 2012–2013, the Authority engaged the public again in 2015, reinitiating EIR/EIS scoping for the blended system in 2016, and continued alternatives refinement from 2016 to 2018. Interagency coordination also informed the development of alternatives for consideration. After identifying the initial group of potential alternatives, plans, concepts, and cross sections were developed as necessary to support early consideration. The initial alternatives were developed and screened in coordination with the NEPA/404/408 Integration process through adoption of a Checkpoint A (Project Purpose & Need) report and a Checkpoint B (Range of Alternatives) report. These reports explain the process and reasoning behind the two alternatives that were selected for further analysis in the EIR/EIS. Those alternatives that were not carried forward by the Authority had greater direct and indirect environmental impacts; were not feasible from a cost, technical, or engineering perspective; and/or failed to meet the project Purpose and Need/project objectives.

In response to comments on the Draft EIR/EIS, the Authority developed a design variant for the Millbrae Station—the Millbrae Station Reduced Site Plan Design Variant (RSP Design Variant)—which was evaluated in a Revised/Supplemental Draft EIR/EIS and is included in Section 3.20, Millbrae Station Reduced Site Plan Design Variant, of this Final EIR/EIS. The RSP Design Variant was developed to address stakeholder concerns and minimize impacts, to the degree feasible, on existing and planned development in Millbrae.

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[3] A nine-party agreement adopted in March 2012 to establish a funding framework for a blended system on the Caltrain corridor. Signatories include the Authority, MTC, PCJPB, San Francisco County Transportation Authority, San Mateo County Transportation Authority, VTA, City of San Jose, City and County of San Francisco, and Transbay Joint Powers Authority.

[4] SB 1029, approved July 2012, amended the Budget Act of 2012 to appropriate funds for HSR projects in the San Francisco to San Jose corridor, consistent with the blended system strategy identified in the Authority's 2012 Business Plan, and the MTC MOU.

[5] SB 557, passed by the Legislature and signed by the Governor in 2013, provided that any bond funds appropriated pursuant to SB 1029 would be used solely to implement a blended system approach.

[6] Passing tracks allow faster-moving trains to bypass slower-moving trains, and have the potential to provide operational benefits associated with faster recovery from incidents or perturbations (disruption events) on the railway. Figure 2-26 of the Draft EIR/EIS illustrates the locations of the passing track options evaluated between 2013 and 2016.

17.3.1.3 Identification of a Preferred Alternative/CEQA Proposed Project

The Draft EIR/EIS identifies and discusses the potential beneficial and adverse impacts of the two project alternatives evaluated and the No Project Alternative. The Draft EIR/EIS identifies Alternative A as the Preferred Alternative and CEQA Proposed Project (Chapter 2, page 2-1). The selection of the Preferred Alternative was based on the data presented in the Draft EIR/EIS, including the supporting technical reports. The identification of the Preferred Alternative was also based on comments and input from agency, local community, stakeholder, and public comments submitted during scoping and outreach, including input received during outreach meetings concerning the Preferred Alternative held during the summer of 2019. Chapter 8, Preferred Alternative, identifies the Preferred Alternative for the Project Section as Alternative A (Figure 8-1). Alternative A consists of a predominantly two-track blended system with no additional passing track, the Millbrae Station Design, and the Diridon Design Variant in the San Jose Diridon Station Approach Subsection. Alternative A was selected as the preferred alternative based on a balanced consideration of the environmental information presented in the Draft EIR/EIS in the context of project Purpose and Need; project objectives; CEQA, NEPA, and Clean Water Act (CWA) Section 404(b)(1) requirements; regional and local land use plans; community preferences; and project costs. Section 8.4.1, Review of Alternative Key Differentiators by Subsection, describes the key community and environmental factors that differentiate the alternatives within each subsection of the Project Section.

The advantage of having identified the Preferred Alternative in the Draft EIR/EIS is that the public and resource agencies have an opportunity to provide comments with the knowledge of the agencies' preliminary preference among alternatives. After preparation and issuance of this Final EIR/EIS, the Authority will consider whether to certify the Final EIR/EIS and approve the Preferred Alternative/Proposed Project pursuant to CEQA, and will consider whether to issue a ROD approving the project pursuant to NEPA. The adopted alternative could be Alternative A as presented in this Final EIR/EIS, Alternative A with design refinements, or another project alternative.

17.3.2 FJ-Response-ALT-2: Millbrae Station Alternatives Considerations

The Authority received many comments stating that no alternatives to the proposed reconfiguration of the existing Millbrae BART/Caltrain Intermodal Station were evaluated, that the proposed parking facilities at the Millbrae Station are not necessary, and that the proposed station design conflicts with one or both of (a) the City of Millbrae's Millbrae Station Area Specific Plan (MSASP) (City of Millbrae 2016) and (b) the Millbrae Serra Station Development (approved in 2019). Other comments suggested alternatives to the proposed Millbrae Station, such as omitting replacement parking at the station, using an existing BART track/platform, and undergrounding some or all of the HSR station.

17.3.2.1 Development of the Millbrae Station Evaluated in the Draft EIR/EIS

One of the Authority's key principles in formulating the station alternatives evaluated in the Draft EIR/EIS was to utilize and improve existing Caltrain stations at those locations where existing Caltrain stations would also be served by proposed HSR operations. The foundation of this concept is that proposed HSR operations would utilize as much of the same Caltrain infrastructure as feasible (a legislatively required "blended system") to minimize both the need for right-of-way acquisition as well as corresponding impacts on the environment and adjacent communities. Accordingly, the Draft EIR/EIS evaluates blended service at a level of service through 2040 as agreed to by PCJPB, the Authority, and other transportation agencies, and which in turn provides the foundation for anticipated ridership and infrastructure needs for those stations which would be served by both Caltrain and the proposed HSR.

This standard response describes early public and stakeholder input that informed alternatives to the Millbrae Station; identifies the alternative carried forward for evaluation in the Draft EIR/EIS, including a description of parking requirements that would affect adjacent land uses; addresses the feasibility of station alternatives suggested by commenters; and describes the RSP Design

Variant that was developed in response to comments received on the Draft EIR/EIS, evaluated in the Revised/Supplemental Draft EIR/EIS, and incorporated into this Final EIR/EIS.

Public and Stakeholder Input on Station Alternatives

As explained in Final EIR/EIS Section 2.5, the alternatives development and consideration process was iterative from 2009 to 2019. The Authority solicited public and agency comments on the range of alternatives that should be studied in the EIR/EIS multiple times, including the initial EIR/EIS scoping period in 2009 and during alternative analysis and supplemental alternatives analysis document preparation in 2010. After the blended system framework was established in 2012–2013, the Authority engaged the public again in 2015, reinitiating EIR/EIS scoping for the blended system in 2016, and continued alternatives refinement from 2016 to 2018.

Initial Tier 2 Planning for Four-Track System (2009–2011)

In 2009, the Authority and FRA began the project-level environmental review process. At that time, the proposed project consisted of a four-track fully grade-separated system between San Francisco and San Jose, with HSR sharing the corridor with Caltrain express commuter trains, along with a Millbrae station serving SFO.

As described in Section 9.2.2, Alternatives Analysis Process (2009 to 2010), the Authority considered city and county transportation, land use, and planning information, along with public and agency input on the range of alternatives. Common comments received during the alternatives development and refinement process identified concerns regarding station improvements; conflicts with adjacent land uses due to right-of-way acquisition; noise, vibration, and visual impacts on adjacent communities; and other issues.

Based on consideration of public and agency comments received during the planning and initial scoping processes, an alternative to the Millbrae Station reconfiguration was considered, as detailed in the PAA (Authority and FRA 2010a) and subsequent SAA (Authority and FRA 2010b). The intent of the PAA and SAA was to identify the range of potentially feasible alternatives to analyze in the Draft EIR/EIS. The PAA and SAA documented the preliminary evaluation of alternatives, indicating how each of the alternatives would meet the purpose for the project; how evaluation criteria were applied and used to determine which alternatives to carry forward for preliminary design and detailed environmental analysis; and which alternatives should not be carried forward for further analysis. Alternatives not advanced for detailed study had greater direct and indirect environmental effects, were impracticable, or failed to meet the project's purpose.

The PAA and SAA identified a potential alternative configuration at the Millbrae Station that would have placed one to two HSR tracks below the existing Caltrain and BART tracks in a covered trench/tunnel structure, with the HSR station structure either below grade or split with one platform at grade and one platform below grade. This configuration was intended to avoid the need to acquire new right-of-way at the Millbrae Station and thus minimize the potential for conflicts with transit-oriented development (TOD) around the station.

The PAA and SAA were presented to the Authority Board of Directors during their regular, monthly Board meetings. These meetings provided members of the public with the opportunity to provide comments directly to the Board of Directors regarding the Project Section and alternatives analyses, including alternatives to the proposed Millbrae Station improvements that were evaluated in the PAA and SAA. The PAA was presented and discussed at the April 8, 2010, Board meeting, and the SAA was presented and discussed at the August 5, 2010, Board meeting.

The Authority heard strong opposition from Peninsula communities to the four-track grade-separated alignment alternatives studied in 2010. The community expressed concerns about the magnitude of potential impacts on environmental and community resources due to the need for additional right-of-way acquisitions to accommodate the four-track system, and the proximity of

the corridor to sensitive residential land uses. The Authority and FRA thus suspended work on the San Francisco to San Jose Project Section in mid-2011 to focus on the potential to blend HSR with Caltrain operations within a smaller project footprint. In November 2011, the Authority proposed a blended system concept for the corridor in its Draft 2012 Business Plan.

Tier 2 Planning for a Predominantly Two-Track Blended System (2013 – 2019)

Refer to Draft EIR/EIS Section 2.5.2.2, Transition to a Predominantly Two-Track Blended System (2011–2012), for information regarding the legislative and other actions that defined the framework for blended system operations. Following the development of the blended system framework in 2012, the Authority worked extensively with Caltrain to develop engineering criteria, operating plans, and infrastructure analysis for the necessary upgrades to the corridor beyond the electrification of Caltrain that would be needed to provide HSR service on the Peninsula.

On May 9, 2016, the Authority and FRA distributed an NOP and NOI to reinitiate scoping for the San Francisco to San Jose Project Section EIR/EIS. The 2016 NOP/NOI rescinded the 2009 NOP and 2008 NOI, which were based on a dedicated four-track system, and described the new scope of the project as consisting of the blended system that was envisioned in the agreements and legislation enacted in 2012. Public scoping activities were conducted between May 9 and July 20, 2016, and included three scoping meetings, approximately 30 meetings with business and community groups, early agency coordination, and elected official briefings. The Millbrae Station Design presented added two HSR station tracks and two platform faces to the existing station at grade.

Millbrae Station Parking Needs

Multiple commenters on the Draft EIR/EIS questioned the need for replacement parking at the reconfigured Millbrae Station, contend that replacing existing parking facilities conflicts with the goal of transit to offset private vehicle use, and claim that the Authority intends to inappropriately acquire property for the purposes of setting it aside for future TOD.

Millbrae Station is an end-of-line station for the BART system. To attract riders from an auto-accessible catchment area, BART provided surface and structured parking to support drive-and-park travel to the station when it initiated service to Millbrae in 2003.

The Authority has maintained a program-wide approach of replacing displaced parking at shared-use stations at a 1:1 ratio since 2017. The purpose of replacing existing transit parking (displaced by reconfiguring the station for blended service) is to avoid negatively affecting transit ridership and revenue by reducing the supply of parking to accommodate drive-and-park travel to the station. Therefore, the proposed Millbrae Station Design would provide four surface parking lots west of the existing station to replace the 175 existing Caltrain and 113 BART parking spaces that would be removed by the HSR project. In addition, the Millbrae Station Design includes a limited amount of new parking (37 parking spaces) for HSR riders. While the parking demand by HSR riders would exceed the amount of new parking provided on-site, a constrained approach to parking was taken at the Millbrae Station given the existing transit, walking, and bicycle connections available to HSR riders and the ample long-term commercial parking nearby at SFO reachable via shuttle or BART. The proposed surface parking in the Millbrae Station Design would conflict with development planned in the City of Millbrae's MSASP, including the city-approved Millbrae Serra Station Development.

While the Authority supports and promotes TOD in station areas for the HSR system, TOD is not part of the project definition for the Project Section and is not envisioned or planned by the Authority as a future component of the statewide system. The Authority recognizes the leadership roles of both BART and the City of Millbrae in encouraging and implementing TOD in the Millbrae Station area, and the Authority supports the City of Millbrae's desire for TOD at the site.

At shared-use stations, such as the Millbrae-SFO Station, facilities are sized for project ridership with flexibility to accommodate future growth of HSR and other rail operators. Thus, the Authority's station concept specifically accommodates what is needed to meet the Authority's requirements for future HSR and commuter rail operations for Caltrain and BART. As detailed

below, the Authority continued to engage and inform the City of Millbrae of anticipated conflicts in advance of that jurisdiction's February 2016 approval of the MSASP and February 2018 approval of the Millbrae Serra Station Development:

- In February 2015, the Authority provided the City of Millbrae projected HSR ridership.
- In August 2015, the Authority provided a comment letter on the Draft EIR for the MSASP, which identified the need to include HSR travel demand in the MSASP analysis, including HSR parking demand.
- In February 2017, the Authority presented to the Millbrae City Council the station site plan concept that is evaluated in the Draft EIR/EIS, including the location of replacement surface parking.
- In July 2017, the Authority presented draft mode share estimates for 2029 and 2040 to the Millbrae-SFO Station Intermodal Working Group (IWG) comprised of the Authority, Caltrain, BART, and SFO and City of Millbrae staff.
- In November 2017, the Authority also presented the final mode share estimates to the IWG, including the City's station area planning consultants.

While the proposed station modifications would affect approved planned development, they would not preclude potential future TOD. Draft EIR/EIS Figure 3.13-13 provides an illustrative concept of a potential future TOD that would overlay the proposed surface parking lots associated with the Millbrae Station Design evaluated in the Draft EIR/EIS. Such a development would be consistent with the City of Millbrae's desire for TOD at the site. This would be consistent with the City's desire for TOD at the Millbrae Station, and the Authority's policies of supporting TOD to achieve GHG emissions reductions.

Millbrae Station Design Evaluated in the Draft EIR/EIS

As described in Section 2.6.2.4, Alternative A, of the Draft EIR/EIS, Alternative A would include the construction of new HSR infrastructure at the existing Millbrae BART/Caltrain Intermodal Station, including a new station entrance hall with ticketing and support services on the west side of the existing station along El Camino Real. Alternative B, described in Section 2.6.2.5, Alternative B, would include the same improvements to the existing Millbrae Station as Alternative A.

The primary access to the Millbrae HSR Station is intended to be by transit (Caltrain, BART, San Mateo County Transit District); bicycles; walking; and vehicle pick up and drop off. Enhanced automobile access would be provided on the west side of the station through the extension of California Drive to Victoria Avenue. Curbside passenger pick-up and drop-off facilities west of the station would be located along the new extension of California Drive and El Camino Real; facilities east of the station would be on the first level of the BART parking structure.

Replacement parking for displaced Caltrain and BART parking would be provided at four surface parking lots on the west side of the alignment, with a fifth parking area at Murchison Drive with 37 parking spots for HSR passengers. HSR passengers desiring to drive and park would be able to use available long-term commercial parking off-site or at SFO and reach the station by shuttle. In addition, the historic Southern Pacific Depot/Millbrae Station and associated surface parking along California Drive would be relocated to accommodate track modifications.

The Authority sized the proposed Millbrae Station to accommodate blended service at a level of rail ridership through 2040 as agreed to by the PCJPB, the Authority, and other Bay Area transportation agencies. The proposed Millbrae Station is also consistent with the Authority's adopted station design criteria (Authority 2016). Please also refer to Draft EIR/EIS Volume 3, Book A3, sheets 47 and 48, which provide a facility sizing table for the Millbrae Station, indicating calculations of facility size needed based on projected ridership.

17.3.2.2 Millbrae Station Reduced Site Plan Design Variant Evaluated in the Revised/Supplemental Draft EIR/EIS

Multiple commenters on the Draft EIR/EIS questioned the need for replacement parking at the Millbrae Station and resulting impacts on the Millbrae Serra Station Development.

In response to these comments on the Draft EIR/EIS, the Authority developed the RSP Design Variant. The RSP Design Variant differs from the Millbrae Station evaluated in the Draft EIR/EIS by:

- Eliminating the four surface parking lots on the west side of the alignment that would have served as replacement parking for 175 Caltrain and 113 BART parking spaces that would be displaced by the project
- Relocating the new HSR station entrance hall to the northeast corner of El Camino Real and Millbrae Avenue
- Eliminating lane modifications but retaining signalization changes and pedestrian improvements on El Camino Real
- Eliminating the California Drive extension north of Linden Avenue to El Camino Real from the project

The RSP Design Variant would have fewer impacts on existing and planned development, while preserving HSR track and platform right-of-way needs. It would reconfigure station facilities, parking, and station access to achieve a smaller footprint. The RSP Design Variant would better support TOD by reducing the impact on the approved Millbrae Serra Station Development. Given engineering and operational requirements for the project, it would not be feasible to entirely avoid affecting the Millbrae Serra Station Development.

The RSP Design Variant was evaluated in the Revised/Supplemental Draft EIR/EIS, which was published for public review and comment on July 23, 2021, and incorporated into this Final EIR/EIS.

17.3.2.3 Millbrae Station Alternatives Suggested by Commenters

Commenters suggested additional Millbrae Station alternatives be considered for the Project Section. The alternatives were suggested in comments on the Draft EIR/EIS, and all but one, the Underground Tracks alternative, were not previously considered by the Authority. This response provides a brief summary of the suggested alternatives along with a discussion of why each alternative does not meet the Authority's requirements.

Underground Tracks

A commenter suggested placing tracks underground in the city of Millbrae and at the Millbrae Station to avoid or reduce noise, visual, and land use impacts. This alternative is the same as the alternative configuration evaluated in the PAA and SAA, which would have placed one or two HSR tracks below the existing Caltrain and BART tracks.

While the PAA and SAA contemplated a four-track system as well as the possibility of placing one or two HSR tracks below the existing at-grade Caltrain and BART tracks through Millbrae, the 2012 move to a blended system dramatically changed the engineering requirements for the San Francisco to San Jose Project Section.

In Millbrae, the change to the blended system eliminated some of the constraints and issues that were the initial impetus for considering an underground station option in the four-track system. The design criteria for the blended corridor enabled reducing the track spacing at the Millbrae Station. This enabled a more compact footprint and thus reduced right-of-way impacts, including to residential properties north of the Millbrae Station.

Additionally, constructability and cost factors limited the viability of below-grade station improvements within the blended system regime. Construction of below-grade station

improvements would severely interrupt Caltrain service through the station area, requiring several years of a bus bridge around the construction area. Temporary bus bridge systems would add significant travel time for Caltrain passengers, reduce the reliability of the Caltrain system, and affect Caltrain ridership. Using buses would also cause additional environmental impacts related to noise, motor vehicle emissions, and traffic impacts.

An underground station also presents potentially greater conflicts with existing utility corridors. There are several high-risk utilities, including water, sewer, electrical, and fiber optics, along the Caltrain corridor. An undergrounding plan through Millbrae would disrupt many of the utilities (both underground and overhead), requiring many to be relocated or replaced.

The cost of constructing such track infrastructure was also taken into consideration. The Authority estimated that trackwork alone for an underground station scenario would cost about ten times the amount required for at-grade track. Additionally, an underground station would require vertical circulation (i.e., elevators, stairs) as well as systems for ventilation and pumping out water.

The underground station option would still have an aboveground footprint for the vertical circulation elements. As such, an underground station would not completely avoid affecting planned development west of the station, namely the Millbrae Serra Station Development.

For all of the foregoing reasons, the Authority has determined that an underground station option through Millbrae is not a potentially feasible alternative to consider for further evaluation.

Remove Bay Area Rapid Transit's Third Track

A commenter suggested removal of BART's "underutilized" third track and realignment of other tracks at the Millbrae Station to reduce the project footprint.

Most passengers embark and disembark BART trains from only two of three platforms at the Millbrae Station, and therefore it may look like BART primarily uses two of three available tracks.

The Authority discussed the concept of using one of the three BART tracks with BART staff on several occasions. Through these meetings, BART provided track schematics, a detailed explanation of their existing (pre-COVID) operations, plans for future growth at Millbrae Station, and an understanding of the tunnel infrastructure (Authority 2021). Based on this consultation, BART has confirmed to the Authority that all three BART tracks are integral to the safe and efficient operations of the entire BART system.

The Millbrae Station is the destination for two BART lines—trains that originate in Richmond and trains arriving from SFO—which means two tracks are actively used for regular passenger service. Since Millbrae is an end-of-the-line station, the area just beyond the station is referred to as the Millbrae tail tracks. The tail track area is used for car cleaning activities, overnight fleet storage, and all-day storage of train sections that are left behind when trains are shortened between commute periods. The third track is essential to BART operations in providing access and circulation to the tail tracks including during revenue hours.

BART has also stated that it is currently investing in a new signal control system that will enable it to run increased service frequencies across its network, increasing capacity and reducing crowding on trains. Once this new train control system is completed, BART plans to significantly increase service levels at Millbrae Station above existing levels. During peak hours, these increased operations will require use of all three tracks.

Based on the foregoing, the Authority does not consider removal of BART's third track and realignment of other tracks a potentially feasible alternative.[7]

[7] BART trains use a wider rail gauge (5 feet, 6 inches) than standard (4 feet, 8.5 inches). Accordingly, BART tracks cannot be shared with other rail systems like HSR that use standard gauge.

Avoid Conflicts with Millbrae Station Area Specific Plan Development

A commenter suggested refining the project design to avoid conflicts with MSASP development.

The Authority's policy concerning existing parking at existing stations has been to replace any displaced parking at a 1:1 ratio. The four proposed replacement parking lots associated with the Millbrae Station evaluated in the Draft EIR/EIS would meet the Authority's policy on parking, but would conflict with the approved Millbrae Serra Station Development.

In light of comments received on the Draft EIR/EIS, the Authority introduced and evaluated impacts of the RSP Design Variant in a Revised/Supplemental Draft EIR/EIS. The RSP Design Variant reflects the smallest possible footprint for the Millbrae Station given engineering and operational requirements, and would reduce but not avoid conflicts with the MSASP.

As previously stated, no HSR station configuration through Millbrae, even one operating underground, would fully avoid conflict with the MSASP and the Millbrae Serra Station Development. As noted above, vertical circulation elements (elevators, escalators/stairs) of an underground station would still require an aboveground footprint that would project into the area designated for the Millbrae Serra Station Development. The RSP Design Variant would eliminate all but 37 surface parking spaces, leaving more than 2 acres of property for a revised TOD to be developed by others.

Reduce Impacts on Marina Vista and Monterey Park

A commenter suggested refining the project design to reduce operational noise and vibration impacts on the Marina Vista and Monterey Park areas.

The number of train passbys, combined with the distance from the track centerlines to the nearest residences, inform the levels of noise and vibration experienced at the Marina Vista and Monterey Park neighborhoods. While modifications to the proposed Millbrae Station would not affect the number of train passbys, they would alter the locations of tracks north and south of the Millbrae Station. However, by shifting the track centerlines (HSR, BART, or Caltrain) from one side of the right-of-way to another, this alternative would expose residences west of the right-of-way to increased noise levels and thus overall negate any potential reduction in noise levels experienced by residences to the east. As such, the Authority is not considering evaluation of further adjustments to the locations of tracks within the right-of-way as suggested because it does not offer significant environmental advantages.

Tables 5-9 and 5-10 in Volume 2, Appendix 3.4-A, Noise and Vibration Technical Report, provide details regarding the specific noise impacts, levels, and locations before mitigation. As shown in these tables, project operations would result in 122 severe noise impacts at sensitive receptors in Millbrae. As illustrated on Figures 3.4-10 and 3.4-15, noise impacts in Millbrae would be experienced on both the east and west sides of the Caltrain tracks prior to the application of mitigation. Table 3.4-19 summarizes the vibration impacts as a result of project operations. As illustrated on Figures 3.4-21 and 3.4-26, vibration impacts in Millbrae would also be experienced on both the east and west sides of the Caltrain tracks.

Section 3.4.7, Mitigation Measures, discusses the various noise and vibration mitigation measures for the project, including implementation of the Authority's noise mitigation guidelines regarding application of noise barriers, building sound insulation, and noise easements (NV-MM#3: Implement Proposed California High-Speed Rail Project Noise Mitigation Guidelines); supporting City implementation of quiet zones where cities decide to implement them (NV-MM#4: Support Potential Implementation of Quiet Zones by Local Jurisdictions); vehicle noise specifications (NV-MM#5: Vehicle Noise Specification); special trackwork at crossovers and turnouts (NV-MM#6: Special Trackwork at Crossovers, Turnouts, and Insulated Joints); additional noise analysis during final design (NV-MM#7: Additional Noise Analysis during Final Design); and vibration mitigation measures (NV-MM#8: Project Vibration Mitigation Measures). As described in Section 3.4.7.1, Noise Mitigation Analysis, the Authority has identified potential locations for five noise barriers in Millbrae. Barrier #4 is proposed on the northbound side of the tracks and would reduce the number of severe noise impacts at sensitive receptors in the Marina Vista

neighborhood as well as benefit Monterey Park. The analysis also identified that implementation of both noise barriers and quiet zones would eliminate severe noise impacts in the Marina Vista neighborhood. While the ultimate implementation of both noise barriers and quiet zones is constrained by approval of affected parties and local jurisdictions, the Authority identified mitigation measures in the Draft EIR/EIS that would be available to reduce noise and vibration impacts on the Marina Vista and Monterey Park areas.

Residential Unit Replacement

A commenter suggested replacement of displaced residential units equal to, or in excess of, those allowed by the MSASP.

The Authority's policy concerning existing parking at existing stations has been to replace any displaced parking at a 1:1 ratio. The four proposed replacement parking lots associated with the Millbrae Station evaluated in the Draft EIR/EIS would meet the Authority's policy on parking but would result in a conflict with the approved Millbrae Serra Station Development, thus reducing the availability of the site for residential units envisioned in the MSASP.

Residential units have not been constructed under the MSASP at the Millbrae Station site, and therefore, would not be considered displaced residences for the purposes of CEQA and NEPA. Furthermore, for comparative purposes, the Authority has identified adequate replacement housing in the study area to accommodate both residential units displaced by construction of Alternatives A and B and the total number of residential units under buildout of the MSASP, at 1,750 units (Impact SOCIO#7, Displacements and Relocations of Residences from Project Construction).

Moreover, as illustrated on Draft EIR/EIS Figure 3.13-13, the Authority identified an illustrative concept of a potential future TOD that would overlay the proposed surface parking lots associated with the Millbrae Station Design. Such a development would be consistent with the City of Millbrae's desire for TOD at the site.

In light of comments received on the Draft EIR/EIS, the Authority has evaluated the impacts of the RSP Design Variant in a Revised/Supplemental Draft EIR/EIS, which is described in Section 17.3.2.2, Millbrae Station Reduced Site Plan Evaluated in the Revised/Supplemental Draft EIR/EIS.

No Surface Parking

A commenter suggested eliminating surface parking and replacing parking lots with underground or concentrated high-rise garages.

The Authority's policy is to replace displaced parking at a 1:1 ratio. The most cost-effective way to provide replacement parking is through surface parking lots rather than underground or concentrated high-rise parking garages. Underground parking garages and multilevel parking garages have substantially higher costs than surface level parking due to the need for excavation, foundations, and structural support system. Whereas surface parking lots can cost about $5,000 per space on average, the average cost of aboveground parking structures is about $29,000 per space and the average cost of underground structures is about $38,0000 per space (Victoria Transport Policy Institute 2016). Based on this information, multilevel parking structures cost about 6 times more than surface parking lots and underground parking lots cost about 7.5 times more than surface parking lots. In addition, the construction of multilevel parking structures or underground parking would require a greater level of construction activity, resulting in greater construction emissions than the aboveground replacement parking proposed under the project alternatives. Based on cost and greater construction impacts, the Authority determined the use of underground or multilevel parking garages not to be a potentially feasible alternative.

However, the Authority has considered comments received on the Draft EIR/EIS, including this proposed alternative, and evaluated the RSP Design Variant in a Revised/Supplemental Draft EIR/EIS circulated for public review on July 23, 2021. While the RSP Design Variant does not entirely avoid conflicts with the Millbrae Serra Station Development, it would remove replacement surface parking, leaving the remainder of the site available for TOD. This design variant would not

include underground or concentrated high-rise garages; however, as with the proposed Millbrae Station Design, HSR passengers desiring to drive and park would be able to use available long-term commercial parking off-site or at SFO and reach the Millbrae Station by shuttle.

Eliminating Bypass Track

A commenter suggested eliminating the HSR bypass track and platform.

The Millbrae Station has been sized for project ridership with flexibility to accommodate future growth of HSR and Caltrain. Elimination of the Caltrain bypass track would not allow Caltrain to maintain its operations or to accommodate future growth of HSR. Furthermore, Prop 1A requires that, "[t]rains shall have the capability to transition intermediate stations, or to bypass those stations, at mainline operating speed." Since the Authority intends for HSR trains to stop at Millbrae, it is necessary to have passing tracks so that trains can bypass the Millbrae Station at mainline operating speeds.

Move Bypass Track

A commenter suggested moving the HSR bypass track and platform to a location south of the Millbrae Avenue overpass.

Moving the HSR bypass track and platform to a location south of the Millbrae Avenue overpass was not considered because a track configuration with split platforms would be detrimental to the functionality of the Millbrae Station as an intermodal station. Locating the HSR platform at a substantial distance from BART/Caltrain platforms would also discourage transfers between modes.

Underground BART Tracks and Co-Locate HSR Tracks

A commenter suggested continuing the undergrounding of BART's existing line from its current underground location approximately 1,500 feet north of the existing BART station and coming out at existing grade 1,500 feet south of the existing station within BART's existing right-of-way and accommodating an HSR bypass track at grade above the lowered BART track.

The Authority does not consider undergrounding the existing BART tracks and station a potentially feasible alternative as a result of conflicts with BART operations during construction, conflicts with existing underground utilities, the substantial increased costs of constructing a trench/tunnel structure, and the reduced functionality of the Millbrae Station as an intermodal station.

17.3.2.4 Summary of Millbrae Station Alternatives Evaluated for the San Francisco to San Jose Project Section

As discussed in Section 17.3.1, FJ-Response-ALT-1: Alternatives Selection and Evaluation Process, there is no requirement under NEPA or CEQA to evaluate every conceivable permutation or alternative in an EIR or EIS. Instead, the statutes require analysis of a "reasonable range" of potentially feasible alternatives. Furthermore, under CEQA, an EIR need not include multiple variations of the alternatives evaluated, nor must it consider alternatives to specific components of a project. The Millbrae Station evaluated in the Draft EIR/EIS reflects more than a decade of alternatives development and evaluation throughout the Project Section.

In addition, in response to public comment on the Draft EIR/EIS, the Authority added a variant of the Millbrae Station evaluated in the Draft EIR/EIS, the RSP Design Variant, in a Revised/Supplemental Draft EIR/EIS circulated for public review on July 23, 2021.

17.3.3 FJ-Response-ALT-3: Light Maintenance Facility Alternatives Consideration

The Authority received many comments questioning the screening and selection of LMF locations, including alternative locations considered for the LMF and reasons they were not carried forward. Multiple commenters expressed opposition to the two Brisbane LMF alternatives because of the impacts of these facilities on the community of Brisbane, multiple

commenters suggested that the Authority revise its design criteria to allow for consideration of other locations, and multiple commenters suggested the Authority study other alternatives, including alternatives that the Authority had previously considered and dismissed from further consideration.

17.3.3.1 Purpose and Need for LMF in the San Francisco to San Jose Project Section

The HSR delivery approach has evolved through successive updates to the Authority's business plan, which is released every 2 years. The HSR system was initially envisioned as a fully grade-separated four-track system along the Caltrain corridor between San Francisco and San Jose. However, in 2012, the Authority proposed a blended system for the Project Section, which would primarily consist of a two-track system that would be shared by Caltrain and HSR. The Authority's 2016 Business Plan reaffirmed this blended system approach; however, that plan indicated that San Jose Diridon Station would be a temporary terminal station for the Silicon Valley to Central Valley (Valley-to-Valley) initial start of service.[8] Under this Valley-to-Valley approach, an LMF would be located in the San Jose to Merced Project Section, with another LMF constructed closer to the San Francisco terminus once the San Francisco to San Jose Project Section was completed, thus introducing the concept of multiple LMF sites in Northern California operating together. However, the Valley-to-Valley approach was modified in the 2018 Business Plan, which directed that initial service would be provided between San Francisco and Gilroy, followed by a Valley-to-Valley connection to the Central Valley. This decision reaffirmed San Francisco as the terminal station city for the Northern California portion of the HSR system. With the terminal station located in San Francisco, the LMF was incorporated into the San Francisco to San Jose Project Section to serve the San Francisco station (which will initially be located at Caltrain's 4th and King Street Station and eventually relocated to the Salesforce Transit Center upon completion of the Downtown Rail Extension project).

An LMF would be necessary with the San Francisco to San Jose Project Section to support the San Francisco terminal station operations by dispatching freshly inspected and serviced trains and crews to begin revenue service throughout the day, along with providing daily, monthly, and quarterly maintenance of HSR trainsets. Maintenance activities would include train washing, interior cleaning, wheel truing, testing, and inspections. These activities may occur between runs or as a pre-departure service at the start of the revenue day. Trains and crew would be dispatched from the LMF to the terminal facility to begin revenue service throughout the day. The LMF would also support a limited number of trainsets dispatched to the San Jose Diridon Station and would function as a service point for any trains in need of emergency services. The LMF would be in operation 24 hours per day, with four overlapping shifts of workers rotating in and out of the site.

17.3.3.2 Light Maintenance Facility Site Location Criteria

In 2009, the Authority published Technical Memorandum (TM) 5.3, *Summary Description of Requirements and Guidelines for: Heavy Maintenance Facility (HMF), Terminal Layup/Storage & Maintenance Facilities & Right-of-Way Maintenance Facilities* (Authority 2009), which described the facility size, design, and locational criteria to meet the functional requirements for an LMF serving a dedicated HSR corridor. After release of the 2012 Business Plan, the Authority released TM 5.1, *Summary of Requirements for O&M Facilities* (Authority 2013), to reflect the blended service concept, and TM 5.1 was subsequently updated again in 2016 to address changes in maintenance facility locations and the number of required tracks to be consistent with the 2016 Business Plan. TM 5.1, however, did not supplant the criteria specified in TM 5.3 for the LMF design. As such, the criteria set out in TM 5.3 continue to guide the planning and design of the

[8] The 2016 Business Plan evaluated ridership forecasts based on three distinct implementation scenarios: (1) a Valley-to-Valley scenario, in which the Silicon Valley to Central Valley Line between San Jose Diridon and a station north of Bakersfield opens in 2025, (2) a Valley-to-Valley extended scenario, in which the Silicon Valley to Central Valley Line opens with an extension to San Francisco and Bakersfield in 2025, and (3) the Phase 1 HSR scenario with HSR operations from Los Angeles to San Francisco starting in 2029.

LMF. These TMs are based on best practices and experience gained by other HSR system operators throughout the world and inform project design.

Potential LMF sites were evaluated for the Project Section in accordance with the Authority's following site design criteria:

- **Site size**—The LMF sizing criterion is based on ridership projections and fleet size estimates sufficient to handle projected system growth to the year 2040, as identified in the Authority's 2018 Business Plan. The LMF for the Project Section would be one of three maintenance facilities for the statewide HSR system, so the capacity of the yard would need to be of sufficient size to accommodate approximately one third of the total fleet size. Table 17-1 lists the components of an LMF necessary to support the Northern California HSR sections and the associated acreage, including the San Francisco terminal station (TM 5.1). An area of approximately 100 acres is required to accommodate all necessary components of an LMF (Table 17-1).
- **Double-ended lead tracks**—Lead tracks are necessary to allow trains entering the LMF to reduce speeds. Double-ended lead tracks enable trains to enter and leave the LMF from both ends (generally, north and south) of the facility. Although most trains would arrive from or travel to the terminal station in San Francisco to the north, using the northern lead tracks, southern lead tracks would be used for trains to access the site from the south. As such, double-ended tracks would accommodate ingress and egress for trains traveling to and from the north terminal in San Francisco and for trains traveling to and from the southern end of the Project Section. Double-ended lead tracks are necessary for efficiency and resiliency. This design allows trains to move in and out of the LMF without delay or disruption.

  A single-ended track design (also known as a stub-ended track) would access mainline tracks from one direction only. A single-ended track design would impede operations by requiring trains from the opposite direction to either stop and reverse into the yard, thereby imposing capacity restraints, or to reverse in a more suitable location, thereby resulting in additional deadhead (non-revenue) mileage. This would increase deadhead mileage, increasing operations and maintenance (O&M) costs without any offsetting revenue generation. Furthermore, stub-ended track designs are vulnerable to failures such as a train breakdown on the lead track. If such a breakdown were to occur at a stub-ended facility, trains moving in or out of the LMF would be blocked. The impact of such a failure would likely be significant, causing an interruption of service, decreasing revenue, and compromising confidence in the reliability of the HSR system. Double-ended lead tracks would protect against this risk.

Table 17-1 LMF Design Criteria

Required Feature	Required Dimensions/Sizing
▪ Layover/storage tracks (10) ▪ Service/shop tracks (8)	▪ 1,400' L ▪ Capacity to hold 2 complete trainsets (double trainsets), each approximately 700' L ▪ Total of **60 acres** when combined with lead tracks
Shop floor area and office space	Minimum of **5 acres**
Parking	▪ Minimum of **5 acres** ▪ 150 parking spaces

Required Feature	Required Dimensions/Sizing
Power substation (200' x 400'), cistern, ballast storage, materials storage, hazardous materials storage, materials recycling, emergency generators, and other miscellaneous buildings	Minimum of **15 acres**
Internal roadways and two-way circulation road	Total of **15 acres** when combined with the two-way circulation road
TOTAL	**100 ACRES**

The relative distances of the LMF to the terminal station and mainline track are also important determinants in the selection of potentially suitable LMF sites:

- **Proximity to the terminal station**—The optimal location for the LMF would be within 1.5–3 miles of the San Francisco terminal station (TM 5.3). Other locations further from the station were assessed given the scarcity of feasible sites within 3 miles of downtown San Francisco. With up to four HSR trains running pphpd, the system has been designed to minimize the distance traveled by deadhead movements on the main lines serving the Peninsula. By doing so, the risk to delay of Caltrain services is reduced because there is less congestion, there are fewer train movements required over at-grade crossings, and wear and tear on the railroad infrastructure is minimized. This results in higher reliability for passengers, lower impacts on road users. and lower O&M costs. Close proximity to the terminal station also allows operators to respond more efficiently in emergencies, including midday incidents and train malfunctions.
- **Proximity to the mainline tracks**—Minimizing the distance between the LMF and the main track is important to reducing costs associated with track infrastructure, minimizing travel time between the mainline track and the LMF, and avoiding or reducing potential impacts on existing land uses, including noise and visual impacts, and other environmental resource impacts. The longer the lead track required to access the mainline (> 0.25 mile), the greater the operational inefficiencies caused by deadhead miles.

In addition to site design criteria and proximity to the terminal station and mainline tracks, the Authority considered the following in its evaluation of the suitability of potential alternative LMF sites:

- **Availability and regionally important facility or use**—A potential site was considered unavailable if its development would conflict with regionally important use or facility, such as airports, that cannot be feasibly relocated.
- **Circulation elements**—A potential site was considered unavailable if its development would cause severe impacts on a major circulation element, including blocking vehicular access to a freeway or rail transit system or severing a major arterial such that there would be no opportunity for replacement of that arterial and the resulting detour would substantially impede traffic circulation.
- **Section 4(f) resources**—Each site was evaluated to determine whether its development would potentially constitute a use of a Section 4(f) property. In light of the availability of feasible and prudent alternatives that avoid using Section 4(f) properties, a site that involved the use of a Section 4(f) resource was not considered further.
- **Cost**—Cost of the LMF includes the acquisition and development of the site, including land and development costs associated with the lead tracks and other related infrastructure, including the relocation, reconfiguration, and addition of roadways or freeways.

- **Biological and aquatic resources**—Impacts on biological and aquatic resources were evaluated for each site.
- **Cultural resources**—Impacts on cultural resources were evaluated for each site.
- **Land uses**—Each site was evaluated to determine whether its development would cause substantial impacts on an existing land use, including by dividing an existing community.
- **Environmental justice**—Each site was evaluated with respect to the potential that the development of an LMF would result in disproportionately high and adverse environmental effects on low-income populations, minority populations, and tribal populations.

17.3.3.3 Development of a Range of Light Maintenance Facility Alternatives

The Authority has evaluated an extensive range of potential LMF site locations as part of the project-level environmental analysis for the San Francisco to San Jose Project Section. This evaluation was conducted as part of the 2010 SAA, the *San Francisco to San Jose Project Section Checkpoint B Summary Report* (Authority 2019a), and a 2019–2020 re-evaluation of the LMF sites considered during the initial screening process in 2010.

Supplemental Alternative Analysis (August 2010)

As described in Section 9.2.2 of the Draft EIR/EIS, city and county transportation, land use, and planning information, along with public and agency input on the range of alternatives, provided valuable information during the alternatives development process. Common comments received during the alternatives refinement process and development of the Draft EIR/EIS identified concerns regarding the location of the LMF, among other issues. Based on consideration of the public and agency comments received during the planning and initial scoping processes, various LMF sites were considered, as detailed in the SAA (Authority and FRA 2010b).

The intent of the SAA was to identify the range of potentially feasible alternatives to analyze in the Draft EIR/EIS. The SAA documented the preliminary evaluation of alternatives, indicating how each of the alternatives would meet the purpose for the project; how evaluation criteria were applied and used to determine which alternatives to carry forward for preliminary design and detailed environmental analysis; and which alternatives should not be carried forward for further analysis. Alternatives not advanced for detailed study had greater direct and indirect environmental impacts, were impracticable, or failed to meet the project's purpose.

The SAA evaluated potential LMF sites in accordance with the Authority's preliminary siting criteria for maintenance facilities, which described the facility design and locational criteria to meet the functional requirements for an LMF between San Francisco and San Jose (Authority 2009). Identifying potentially suitable sites between San Francisco and San Jose proved challenging in light of the dense urban development throughout the Project Section. Sites that could potentially accommodate an LMF were subjected to an initial screening process, which focused on the capacity of the sites to meet engineering and design guidelines established through the Authority's TMs.

The following four sites were analyzed in detail in the 2010 SAA (Authority and FRA 2010b):

- Port of San Francisco (Piers 90–94)
- SFO
- West Brisbane
- East Brisbane

The SAA evaluation focused on operational features of the potential LMF sites. Based on that assessment, the Port of San Francisco and SFO sites were withdrawn from consideration and the West Brisbane and East Brisbane sites were advanced for further evaluation.

The Port of San Francisco site was found to be operationally deficient because of its size, distance from the mainline tracks, and need to be stub-ended (i.e., single access and egress), which would constrict operations. Acquiring the right-of-way to build the necessary lead tracks

from this site to the Caltrain mainline tracks would be costly and running trains along the lead tracks would be disruptive to the adjacent dense urban neighborhoods. This site was therefore not recommended for further study.

The SFO site was adequately sized (100 acres), but operationally deficient because of its distance from the mainline track and need to be stub-ended. Providing the necessary lead tracks from the SFO site to the Caltrain mainline tracks would be costly and require modifications to the US 101 Interchange. Furthermore, the SFO site was determined to be not available because the lease to the site had been renewed with the current tenants. This site was therefore not recommended for further study.

The East and West Brisbane sites provide adequate space (100 acres) to provide operational flexibility desired for a double-ended LMF. They are adjacent to the Caltrain mainline track, providing convenient and close connections to the HSR mainline tracks for both southbound and northbound access. Providing northbound and southbound access would support timely provision of trainsets to the San Francisco terminal station, and would facilitate switching trainsets out during normal operations. For these reasons, the two options at the Brisbane Bayshore site were recommended to be carried forward for further study.

The SAA was presented to the Authority Board of Directors during its regular, monthly Board meetings. These meetings provided members of the public with the opportunity to provide comments directly to the Board of Directors regarding the Project Section and alternatives analysis, including the LMF alternatives that were evaluated in this document. The SAA was presented and discussed at the August 5, 2010 Board meeting.

Checkpoint B Summary Report (2016–2019)

In addition to the analyses of the LMF options in the SAA, the Authority conducted additional assessment of the four LMF sites considered in the 2010 SAA (Port of San Francisco, SFO, West Brisbane, and East Brisbane sites) as part of the *San Francisco to San Jose Project Section Checkpoint B Summary Report* (Authority 2019a), to consider the environmental impacts that would likely result from the development of each site and to identify potential practicability constraints associated with the LMF sites pursuant to the requirements of CWA Section 404(b)(1) Guidelines (40 C.F.R. Part 230).

This evaluation was based on the preliminary engineering designs evaluated in the 2010 SAA, which were subsequently refined during the alternatives development process for the predominantly two-track blended system. Consistent with the LMF functional criteria, the evaluation assumed that each site would be 100 acres. Table 17-2 summarizes the performance of the LMF sites evaluated relative to the siting and evaluation criteria.

The development of each of the four sites for an LMF would result in impacts on aquatic resources, with West Brisbane having the greatest impacts and East Brisbane the least. As a potentially practicable option with the least aquatic resource impacts and no impacts on listed species, the East Brisbane site is evaluated in the Final EIR/EIS. The West Brisbane site is also evaluated in the Final EIR/EIS. Although development of an LMF at the Port of San Francisco or SFO site would result in fewer impacts on aquatic resources than at the West Brisbane site, neither site would serve as a practicable option because of their operational constrictions and lack of availability. Because the Port and SFO options would not be practicable for an LMF, they were not considered potentially feasible and therefore not advanced for evaluation in the Draft EIR/EIS.

Table 17-2 Summary of Checkpoint B LMF Site Evaluation[1]

Site Options	Performance Relative to Siting Criteria and Environmental Evaluation	Decision	
		Carried Forward	Withdrawn
Port of San Francisco	▪ Size—100 acres ▪ Operational considerations—stub-ended facility ▪ Not available—site is part of San Francisco Maritime Eco-Industrial Center ▪ Wetlands and waters impact—5.1 acres ▪ Biological resources—no special-status species or riparian habitat. ▪ Traffic circulation—would block road connection from Cesar Chavez Street to commercial/industrial development and would require reconstruction of a section of I-280		X
West Brisbane	▪ Size—100 acres ▪ Operational considerations—double-ended facility ▪ Site is available, but reduces land available for planned development (mixed use/residential permitted and commercial) at Brisbane Baylands ▪ Wetlands and waters impact—10.2 acres ▪ Biological resources—no special-status species or riparian habitat	X	
East Brisbane	▪ Size—100 acres ▪ Operational considerations—double-ended facility ▪ Site is available, but reduces land available for planned development (commercial/residential prohibited) at Brisbane Baylands ▪ Wetlands and waters impact—1.4 acres ▪ Biological resources—no special-status species or riparian habitat	X	
SFO	▪ Size—100 acres ▪ Operational considerations—stub-ended facility ▪ Not available—site is in long-term lease for critical airport-related operations. ▪ Wetlands and waters impact—1.8 acres ▪ Biological resources—0.6 acre of habitat for salt marsh harvest mouse, California Ridgway's rail and California black rail		X

EIR = environmental impact report
EIS = environmental impact statement
I- = Interstate
LMF = light maintenance facility
SFO = San Francisco International Airport
[1] This analysis was based on project footprints from the 2010 Supplemental Alternatives Analysis. The design of the East and West Brisbane LMF sites has been refined since 2010; therefore, the current project footprints reported in the Final EIR/EIS have slightly different acreages and impacts on aquatic and biological resources than shown in this table.

Additional LMF Site Evaluation Analysis (2019–2020)

Between 2019 and 2020, the Authority reviewed and reassessed 11 potential LMF sites it considered during its initial screening process for the Project Section. As part of that process, the Authority evaluated these sites with respect to their capacity to meet key design, engineering, and operational criteria and to their feasibility in light of roadway circulation impacts, cost, and other factors described in Section 17.3.3.2, Light Maintenance Facility Site Location Criteria.

This evaluation determined that the following nine sites did not warrant further evaluation in the Draft EIR/EIS because they did not meet the Authority's site design criteria, are not sufficiently proximate to the terminal station and mainline tracks, or are otherwise not available or capable of being built in light of the cost, logistics, and other factors, including adverse environmental impacts:

- San Francisco Yard (Caltrain Station at 4th and King)
- Port of San Francisco (Piers 90–94)
- Cow Palace (East/West)
- Cow Palace (North/South)
- Georgia Pacific Site
- SFO
- Hayward Yard
- Redwood City Wye
- Newhall Yard

Table 17-3 provides a description of the nine sites and summarizes the rationale for withdrawal of these sites from further consideration. This assessment confirmed that only the two Brisbane sites met both the design and engineering criteria for the LMF and would be potentially feasible sites for development of this facility. Additional information regarding this LMF site assessment is included in Volume 2, Appendix 2-K, Light Maintenance Facility Site Selection Evaluation, of the Final EIR/EIS.

LMF Alternatives Evaluated in the Draft EIR/EIS

As described in Section 2.6.2.4 of the Draft EIR/EIS, Alternative A would include construction of the East Brisbane LMF. The East Brisbane LMF would be built south of the San Francisco tunnels on approximately 100 acres east of the Caltrain corridor. Direct HSR mainline track access would be provided along double-ended yard leads that would cross over the mainline track on an aerial flyover at the north end, with an at-grade track entering the LMF from the south. Transition tracks (approximately 1,400 feet long) would allow trains to reduce or increase speed when entering or exiting the East Brisbane LMF. The East Brisbane LMF would include a maintenance yard with 17 yard tracks adjacent and parallel to a maintenance building containing eight shop tracks with interior access and inspection pits for underside and truck inspections. The maintenance building would provide storage areas for reserve equipment, workshops, and office space. A power generator, sewage system, cistern, collection point, and electrical substation would be north of the maintenance building with a 400-space surface parking lot for automobiles and trucks east of the maintenance building. An access road would connect the facility to the realigned Tunnel Avenue.

Alternative B, described in Section 2.6.2.5, would include construction of the West Brisbane LMF. The West Brisbane LMF would be built south of the San Francisco Caltrain tunnels on approximately 110 acres west of the Caltrain corridor. Direct mainline track access would be along double-ended yard leads that would cross over the mainline track on aerial flyover and would enable north and south movements. The four existing mainline tracks would be shifted west by up to 16.5 feet, and new yard leads connecting to the West Brisbane LMF would be built east and west of the existing tracks. The yard leads east of the existing tracks would cross over the realigned four-track alignment on an aerial flyover to avoid train operations on the mainline track, converging with the yard leads on the west side of the track alignment. Transition tracks (approximately 1,400 feet long) would allow trains to reduce or increase speed when entering or exiting the LMF. The West Brisbane LMF would include a maintenance yard with 17 yard tracks parallel to a runaround track and a maintenance building with shop tracks. A power generator, sewage system, cistern, collection point, and electrical substation would be north of the maintenance building. A 400-space surface parking lot would be provided west of the maintenance building with truck and vehicle access to Industrial Way, which parallels and connects to Bayshore Boulevard.

Table 17-3 Summary of LMF Sites Considered and Withdrawn in the SAA, Checkpoint, and Other Alternatives Processes from Detailed Study in the Draft EIR/EIS

Site Options	Description	Summary Rationale for Withdrawal
San Francisco Yard	The San Francisco Yard is located at the 4th and King Street Station, owned by Caltrain. The site is surrounded by dense urban neighborhoods, commercial development, port facilities, and a Major League baseball stadium. For many years, the City and County of San Francisco has evaluated this land for even greater development around the 4th and King Street Station. This area of San Francisco is a point of heavy vehicular movements, as I-280 terminates at this location onto King Street and 6th Street. To the north, I-80 also has several entrance/exit ramps at 8th Street, 7th Street, 5th Street, 4th Street, and 2nd Street. At approximately 2 miles from the SFTC, the San Francisco Yard is sufficiently proximate to the terminal facility. It would also be sufficiently close to the mainline tracks. The LMF would be a double-ended facility here, with trains coming in from the south, and going north to the SFTC.	The San Francisco Yard site was eliminated from consideration because it would adversely affect a regionally important transportation facility, severely disrupt circulation elements of a major urban area, displace blocks of high-density residential and commercial development, and require unreasonable expenditures of funds to acquire existing development. Development of the site would also result in adverse impacts on cultural resources as the site is located in an area highly sensitive for both historic and precontact archaeological resources. For these reasons, the Authority determined that the San Francisco Yard is not a potentially feasible site and, as such, was not advanced for evaluation as an LMF site in the Draft EIR/EIS.
Port Site (Piers 90–94)	The Port Site is located in an industrial area of San Francisco. The site, much of which is currently vacant, is owned and operated by the Port of San Francisco. Currently, the Port is seeking regulatory approvals to develop this land as a site for construction staging activities, storage, materials recycling, and other industrial uses. In this area, the Caltrain tracks are beneath the northbound and southbound structures of the I-280 freeway. Due to the overhead conflict, to connect the LMF to the mainline, a 1-mile tunnel would be necessary to facilitate grade separation of the lead tracks from the mainline tracks. This tunnel would sever the existing trench of Cesar Chavez Street, a major east-west arterial street. The construction of the tunnel would also have tremendous impacts, as the columns of I-280 would need to be relocated within Islais Creek.	An LMF at the Port Site would affect a regionally important agency, the Port of San Francisco. Development of the site would also result in major impacts on street circulation elements within South San Francisco. The development of the Port Site for the LMF would be unreasonably costly due to both the value of the land that would be acquired and the cost of the additional necessary infrastructure modifications. For these reasons, the Authority determined that the Port Site was not a potentially feasible location for the LMF and, consequently, it was not advanced for evaluation in the Draft EIR/EIS.
Cow Palace (East-West and North-South)	The Cow Palace, which is located in Daly City, has functioned as a convention center since 1941. This site location would affect the City of Brisbane, and the residential neighborhoods of Bayshore Heights and Visitacion Valley. The site is approximately 10.5 miles from the terminal station, which would be a suitable distance from an operational standpoint. The site is over 1 mile from the mainline track, which would be less desirable than being adjacent to the mainline.	**Cow Palace site, East-West.** Cow Palace's designation as a 4(f) resource would likely render the site unavailable. The Cow Palace East-West site would be unreasonably costly to develop. Moreover, the placement of the LMF at this site would result in the displacement and division of a residential and commercial development with environmental justice populations. Consequently, the Cow Palace East-West site was determined to not be a potentially feasible location for the development of the LMF and was not advanced for evaluation in the Draft EIR/EIS.

Site Options	Description	Summary Rationale for Withdrawal
	The Authority considered two configurations at the Cow Palace site, East-West and North-South. The East-West configuration is a single-ended facility. The North-South configuration is a double-ended facility, which uses a tunnel to burrow through the San Bruno Mountain.	**Cow Palace site, North-South.** The Cow Palace's designation as a 4(f) resource would render the site unavailable and would be unreasonably costly to develop. Moreover, the placement of the LMF at the site would result in the displacement of residential and commercial development and the dividing of existing communities, biological resource impacts, cultural impacts, and environmental justice impacts. Consequently, the Cow Palace North-South site was determined to not be a potentially feasible location for development of the LMF and was not advanced for evaluation in the Draft EIR/EIS.
Georgia Pacific Site	The Georgia Pacific site largely consists of commercial development. To the west of the site is US 101 and further to the west is downtown South San Francisco. A nearby arterial is East Grand Avenue, which has ramps to US 101 and connects the residential neighborhoods to the west to the industrial neighborhoods to the east. Passing through the site is South Airport Avenue, which is a major north-south arterial that provides access through the industrial neighborhoods. At approximately 13 miles from the terminal station, this alternative would be marginally acceptable from an operational standpoint. This site is approximately 0.5 mile from the mainline track, which is less desirable than being adjacent to the mainline track. The 0.5-mile lead track would affect South San Francisco Caltrain Station and a train storage facility for UPRR. This is a single-ended facility, which is not desirable.	The Georgia Pacific site was eliminated from consideration due to circulation impacts and unreasonable costs. Additionally, there are impacts on biological resources and there would be substantial displacement of industrial buildings. Consequently, the Georgia Pacific site was determined to not be a potentially feasible location for development of the LMF and was not advanced for evaluation in the Draft EIR/EIS.
SFO	SFO is a regionally important transportation facility owned and operated by the City and County of San Francisco. The land use north of the airport is largely comprised of hotels, commercial, and industrial land uses. It is approximately 15 miles from the terminal station, which is marginally acceptable from an operational standpoint. It is approximately 1.5 miles from the mainline track, which is less desirable than being adjacent to the mainline track. The LMF requires a lead track to connect to the mainline tracks to the north, and will affect the South San Francisco Caltrain Station and UPRR storage facility. It is a single-ended facility, which is not desirable.	The development of the SFO site for the LMF would conflict with airport use and operations, result in severe impacts on existing circulation elements, and require unreasonable expenditures of funds. Additionally, there would be aquatic and biological impacts with construction of the lead tracks. Consequently, the SFO site was determined to not be a potentially feasible location for development of the LMF and was not advanced for evaluation in the Draft EIR/EIS.
Hayward Yard	The Hayward Yard site is located in an area consisting primarily of private residential development. The site is adjacent to a large apartment complex to the south and several commercial developments along Railroad Avenue. Development of this site would require the relocation of Railroad Avenue and South Delaware Street, a major north-south arterial. The site is approximately 20 miles south of the terminal station. This site is adjacent to the Caltrain tracks and is a double-ended facility.	The Hayward Yard site would have a Section 4(f) impact and pose an unreasonable cost. It would also have unacceptable impacts on dense urban neighborhoods, aquatic impacts, and cultural resources. Consequently, the Hayward Yard site was determined to not be a potentially feasible location for development of the LMF and was not advanced for evaluation in the Draft EIR/EIS.

Site Options	Description	Summary Rationale for Withdrawal
Redwood City Wye	The Redwood City Wye site is bounded by the Caltrain corridor to the west and the Dumbarton Rail Spur to the north. The LMF would heavily affect private residences and commercial properties in an area with large minority populations and low-income populations. This site is approximately 27 miles south of the terminal station. This distance would be unacceptable from a rail operations perspective.	The Redwood City Wye site would cause severe impacts on existing circulation patterns and require unreasonable expenditures of funds. There would also be biological impacts, impacts on a railroad spur track, and unacceptable impacts on a sensitive residential community. Consequently, the Redwood City Wye site was determined to not be a potentially feasible location for development of the LMF and was not advanced for evaluation in the Draft EIR/EIS.
Newhall Yard	The Newhall Yard site is owned by the Santa Clara Valley Transportation Authority and is being planned as the location for a future BART storage facility necessary for the expansion of the BART system to Santa Clara. Other land uses surrounding the facility include industrial facilities and Norman Y. Mineta San Jose International Airport to the east. The site is approximately 46 miles from the terminal station. This site is located directly adjacent to the mainline and is a double-ended facility.	The development of the Newhall Yard site for the LMF would interfere with a regionally important use and require unreasonable expenditures of funds. Consequently, the Newhall Yard site was determined to not be a potentially feasible location for development of the LMF and, consequently, was not advanced for evaluation in the Draft EIR/EIS.

BART = Bay Area Rapid Transit
EIR = environmental impact report
EIS = environmental impact statement
I- = Interstate
LMF = light maintenance facility
SFO = San Francisco International Airport
SFTC = Salesforce Transit Center
UPRR = Union Pacific Railroad

Both the East and West Brisbane LMF sites would satisfy the key engineering, financial, and operational considerations that guide the siting of an LMF. The Brisbane Baylands is one of the few vacant sites remaining within the San Francisco to San Jose corridor of a size sufficient to support the LMF, which allows for the development and operation of a facility without severe disruptions or changes to existing land uses. Moreover, the Brisbane sites provide feasible options for the construction and operation of the LMF. The East and West Brisbane sites have adequate space (100 acres) to provide operational flexibility desired for a double-ended LMF. They are adjacent to the Caltrain mainline track, providing convenient and close connections to the HSR mainline tracks for both southbound and northbound access. Providing northbound and southbound access would support timely provision of trainsets to the San Francisco terminal station, and would facilitate switching trainsets out during normal operations.

17.3.3.4 Light Maintenance Facility Alternatives Suggested by Commenters

Commenters suggested that a number of LMF alternatives be considered for the Project Section, including LMF alternatives previously considered and dismissed from further evaluation by the Authority on the basis that they did not meet site design criteria, were not sufficiently proximate to the terminal station and mainline tracks, or were otherwise not available or feasible in light of the cost, logistics, and other factors described in the preceding section.

The following LMF alternatives were suggested in comments on the Draft EIR/EIS and were not previously considered by the Authority. A brief summary of each suggested LMF alternative is provided along with a discussion of why it does not meet the Authority's site feasibility requirements and environmental impacts considered.

Location 1: Bayview Industrial District

This potential site is located in the Bayview Industrial District in San Francisco and is generally bounded by Napoleon Street on the north, Industrial Street on the south, US 101 on the west, and Interstate (I-) 280 and the Caltrain corridor on the east. In this area, the I-280 freeway is situated on a viaduct structure directly above and aligned with the Caltrain tracks. The columns of I-280 are placed on both sides of the tracks at approximately 130-foot intervals. Because of the overhead freeway conflict, the LMF lead track would need to be constructed with a 1-mile tunnel in order to create grade separation from the mainline tracks. This tunnel would sever the existing trench of Cesar Chavez Street, a major east-west arterial street. The construction of the tunnel would also have substantial impacts, as the columns of I-280 would need to be relocated within Islais Creek. In order to construct the northbound and southbound lead tracks, approximately 3 miles of I-280 freeway structures would require relocation for the northbound, southbound, and ramp structures.

Site Feasibility

- **Circulation impacts**—Construction of the tunnel would sever Cesar Chavez Street, a major arterial in San Francisco, which connects approximately 200 to 250 acres of medium-density industrial neighborhoods east of the US 101 freeway to much of San Francisco. The loss of this connection would overburden the next available access point to US 101, which is approximately 1.5 miles north of the existing on/off ramps.
- **Circulation impacts**—The relocation of I-280 freeway structures would severely disrupt traffic operations on an extremely busy freeway. Construction of this magnitude would require either freeway closure until construction is complete, or a set of temporary structures for detours which would be extremely expensive. The California Department of Transportation (Caltrans) would be unlikely to support such a relocation.

Environmental Impacts

- **Aquatic resource impacts**—The relocation of six piers in Islais Creek Channel associated with the relocation of an elevated portion of I-280 would result in approximately 5.1 acres of permanent and temporary impacts on aquatic resources.

Conclusion

An LMF at the Bayview Industrial District would result in major impacts on street circulation elements in San Francisco. Impacts on the I-280 freeway and associated ramps would likely be unacceptable to Caltrans. For these reasons, the Authority does not consider the Bayview Industrial District a potentially feasible site for the LMF.

Location 2: Coyote Valley

Several commenters contended that the Authority did not disclose that an LMF at one of the Brisbane Baylands sites was intended to function in conjunction with an LMF at a site south of San Jose. The HSR system was initially envisioned as a fully dedicated two-track railroad through Northern California, with a dedicated four-track HSR system between San Francisco and San Jose. However, in 2012, the Authority proposed a blended system for the Project Section, which would primarily consist of a two-track system that would be shared by Caltrain and HSR. The Authority's 2016 Business Plan reaffirmed this blended system approach; however, that plan indicated that San Jose Diridon Station would be a temporary terminal station for the Valley-to-Valley initial start of service. Under this Valley-to-Valley approach, an LMF would be located in the San Jose to Merced Project Section, with another LMF constructed closer to the San Francisco terminus once the San Francisco to San Jose Project Section was completed, thus introducing the concept of multiple LMF sites in Northern California operating together. However, the Valley-to-Valley approach was modified in the 2018 Business Plan, which directed that initial service would be provided between San Francisco and Gilroy, followed by a Valley-to-Valley connection to the Central Valley. This decision reaffirmed San Francisco as the terminal station city for the Northern California portion of the HSR system. With the terminal station located in San Francisco, the LMF was incorporated into the Project Section to serve the station (which would initially be located at Caltrain's 4th and King Street Station and eventually relocated to the Salesforce Transit Center upon completion of the Downtown Rail Extension project), and thus eliminated the concept of two LMF stations in Northern California functioning together.

Nevertheless, the Authority has considered commenters' suggestions to evaluate LMFs south of San Jose, including at a location in the Coyote Valley. The proposed Coyote Valley location is approximately 65 miles from the San Francisco terminal station. Please also see additional discussion of operational, cost, and environmental considerations of a Gilroy LMF option in Part 2 of Appendix 2-K; the discussion of deadhead moves and their operational, cost, and environmental impacts for a Gilroy LMF also applies to a Coyote Valley location, except that a Coyote Valley location would be approximately 15 miles one-way closer to San Francisco.

Site Feasibility

While a site in Coyote Valley would be proximate to the mainline tracks and could accommodate a double-ended facility, the distance from such an LMF site between San Jose and Gilroy to the San Francisco terminal station would increase costs and reduce operational reliability associated with increasing the number of miles a non-revenue-generating train would travel. This would require an additional 27 deadhead trains per day to be added to the 124 revenue trains per day to be scheduled on the Caltrain corridor to account for transportation from the facility to the terminal station in San Francisco for the start of daily services and back to the facility at the end of daily service. This represents nearly a 25 percent increase in the number of high-speed train movements on the entire Caltrain corridor. This would extend the hours of operation, increase the risk for train-to-vehicle interfaces at all 80 grade crossings, and therefore reduce operational reliability. As deadhead moves generally occur at the start and end of the operating day, longer distances from the terminal station and hence longer travel times would result in either shorter windows for undertaking maintenance of the track and systems or in a shorter operational window to protect the maintenance times. Increasing the number of trains, however, would increase the wear and tear of the system and create the need for more maintenance. This may also affect the blended operations schedule due to the reduction of track capacity.

Cost and operations impacts associated with the increased distance to the terminal station would include:

- Increased costs associated with operating crews, equipment operating, equipment maintenance, and additional trackage such as crossovers, passing tracks, or even third main tracks to support the same amount of revenue service.
- Impact on blended operations schedule from reduction of track capacity for both passenger and freight railroads. High-speed trains in this area would be sharing tracks with the Caltrain local train services in blended operations, and freight trains use the Caltrain corridor primarily at night (which is when the additional deadhead movements would need to occur). Capacity is limited on the Caltrain corridor, which is predominantly a two-track railway with limited passing opportunities. Adding more deadhead moves (which do not generate revenue) along the capacity-constrained corridor would increase the risk of schedule impacts, which would be magnified by the complexity of the blended system.
- Impact on blended operations schedule from use of Caltrain and HSR revenue train slots by trainsets from a Coyote Valley LMF traveling to and from the San Francisco terminal station.
- Decrease in track operation windows as deadhead moves generally occur at the start and end of the operating day. Longer distances from the terminal station, and hence longer travel times, would result in either shorter windows for undertaking maintenance of the track and systems or in a shorter operational window to protect the maintenance times. The former would affect maintenance costs and quality, while the latter would reduce the number of revenue-earning hours available. Increased resource consumption related to the greater distance from the metropolitan area would result in greater environmental impacts, and the increased train traffic and extended hours of operation would cause community impacts.

Environmental Impacts

The potential locations of a Coyote Valley LMF would be more sensitive for wildlife than the Brisbane LMF alternatives. Coyote Valley contains habitat for a number of threatened and endangered species and is also a wildlife movement corridor between the inner Coast Range and the Santa Cruz Mountains. The Brisbane LMF alternative sites, while having some potential for sensitive wildlife species, primarily consist of prior railroad marshalling yards and a former municipal landfill and are less valuable for habitat compared to available sites in Coyote Valley.

A Coyote Valley LMF would increase train movements, which would increase the potential for incidents at 80 grade crossings between San Francisco and Gilroy, thereby increasing the risk of delay for all rail services on the Caltrain corridor. This could lead to a decline in on-time performance of all services on the Peninsula. Furthermore, increasing the number of trains at the crossings directly increases the amount of gate-down time. A gate is down for approximately 1 minute every time a train goes through, and 27 extra trains would cause approximately 27 more minutes of gate-down time per day at every at-grade crossing. The increased gate-down time due to additional trains would also affect emergency vehicle response time. As trains are mandated to blow the horn at every at-grade crossing, the addition of deadhead moves would increase noise levels during overnight and early morning noise-sensitive hours for thousands of sensitive receptors that would be avoided with a single LMF facility in Brisbane.

Conclusion

For the operational reasons listed above, the Authority does not consider Coyote Valley a feasible location for the LMF. Furthermore, a Coyote Valley LMF alternative would have greater environmental impacts on habitat for common, threatened, and endangered species than the Brisbane LMF. Therefore, a Coyote Valley LMF is not considered a potentially feasible alternative warranting further evaluation in the EIR/EIS.

Location 3: Gilroy Maintenance-of-Way Facility

As described under the discussion for Location 2: Coyote Valley, several commenters contended that the Authority did not disclose that an LMF at one of the Brisbane Baylands sites was intended to function in conjunction with an LMF at a site south of San Jose. While a multiple LMF approach was envisioned as part of the Authority's 2016 Business Plan, the HSR delivery

approach has further evolved through successive updates to the business plan and an LMF south of San Jose is no longer needed to support the Valley-to-Valley approach.

Nevertheless, the Authority has considered commenters' suggestions to evaluate LMFs south of San Jose, including at a location near Gilroy. The Gilroy location is approximately 80 miles from the San Francisco terminal station. Please also see additional discussion of operational, cost, and environmental considerations in Volume 2, Appendix 2-K.

A Gilroy LMF would require the same number of deadhead moves described for the Coyote Valley LMF alternative, but the deadhead travel would be even further to get to and from Gilroy, and thus the operational costs and inefficiencies would be worse than the Coyote Valley LMF alternative. More at-grade crossings would be affected by additional train travel and more noise-sensitive receptors would be affected due to more train horn soundings than a Coyote Valley LMF alternative. Furthermore, a Gilroy LMF site would need to be located south and east of Gilroy in order to be accessible by the HSR mainline alignment and thus would be located in the Soap Lake floodplain, which is a wildlife movement corridor and is also sensitive for cultural resources. As a result, a Gilroy LMF site would result in higher impacts related to biological resources, cultural resources, and floodplains compared to a Brisbane LMF site, which is in a less sensitive area for biological resources, is an area that is mostly fill and thus less sensitive for archaeological resources, and is not a broad floodplain like the Soap Lake floodplain.

For cost and operational reasons, the Authority does not consider Gilroy a feasible location for the LMF. Furthermore, a Gilroy LMF alternative would have greater environmental impacts, including impacts to habitat for common, threatened, and endangered species, greater hydrology and water quality impacts, and greater impacts related to operational noise than a Brisbane LMF alternative. Therefore, a Gilroy LMF is not considered a potentially feasible alternative warranting further evaluation in the EIR/EIS.

Location 4: Two Light Maintenance Facilities

Commenters suggested that the Draft EIR/EIS fails to adequately analyze alternatives involving two LMFs operating in tandem instead of a single Northern California LMF in Brisbane. Comments asserted that the maximum maintenance level at the Brisbane LMF could be lowered to Level I if a Level III LMF were constructed between San Jose and Gilroy, referencing Appendix 2-F, Summary of Requirements for Operations and Maintenance Facilities (in Volume 2 of the Draft EIR/EIS). The comment asserts that, regardless of which location is determined for Level III maintenance facilities, the HSR system would require the other facility to support Level I maintenance, but that the Draft EIR/EIS fails to present this analysis of alternatives.

As discussed above, due to a change in project delivery and phasing, there is no longer a requirement for an LMF (for Level I, II, or III maintenance) between San Jose and Gilroy.

The concept of two separate LMFs, one in Brisbane and one in Gilroy, was not advanced for evaluation in the Draft EIR/EIS because it would result in additional cost, operational inefficiencies, and additional environmental effects compared to a single LMF in Brisbane, as discussed below.

- Two LMFs would require a larger overall footprint than a single LMF. The construction of two LMF facilities (either a Level III in Brisbane and a Level I between San Jose and Gilroy, or a Level I in Brisbane and a Level III between San Jose and Gilroy) would result in substantial additional construction-period effects and permanent effects. A single LMF facility that provides Level I, II, and III maintenance results in a smaller overall footprint than two LMFs, with one providing Level III maintenance and the other providing only Level I maintenance. As discussed in Appendix 2-F, both facilities require approach and exit tracks, and double-ended facilities operate far more optimally than stub-ended facilities. Both facilities would also require storage tracks for trains: (1) a Level I facility requires sufficient storage tracks to accommodate the trains to be supplied for the next morning's service at the HSR stations supported by the facility. As discussed in the Draft EIR/EIS, 10 storage tracks would be required for an LMF providing Level I daily maintenance; and (2) a Level II or III facility requires 2 to as many as 8 maintenance shop tracks, depending on level. Both facilities

would require a maintenance building with shop areas and office space, parking areas for staff, power substations, storage facilities, internal roadways, and roadway access to adjacent public roadways. As such, if there were separate Level I and Level III facilities, the total footprint would be much larger than a combined LMF providing Level I, II, and III maintenance. This would result in additional construction activity and environmental impacts due to the construction of additional facilities (e.g., additional track, storage, roads, buildings) that would be avoided with construction of a single facility. As noted above concerning both the Coyote Valley and Gilroy locations, construction of a Level I or Level III facility in those areas would result in additional environmental impacts in sensitive habitat, floodplain areas, or both. These impacts would be avoided with a single LMF providing Level I, II, and III maintenance facilities in Brisbane.

- Two LMFs would also require additional employees, since two facilities would be operated on a continual basis, which would result in higher operational costs. Although Level III maintenance activities are nominally monthly activities for a single train, Level III maintenance activities are done on a rolling basis for different trains, such that the Level III LMF would always be operating, resulting in additional staff dedicated to each facility. In contrast, a single facility allows for efficiencies in staff use so that staff can work on Level I, II, and III maintenance as necessary.
- A Level I LMF between San Jose and Gilroy and a Level III LMF in Brisbane is not considered logistically desirable given the Authority's operational requirements, would result in additional operational cost, and would result in greater operational environmental impacts due to overnight deadhead train moves compared to the proposed LMF providing Level I, II, and III maintenance activities in Brisbane.

Therefore, alternatives with a Level I LMF in Brisbane combined with a Level III LMF between San Jose and Gilroy were not considered potentially feasible alternatives and were dismissed from further evaluation in the EIR/EIS. In summary, the reasons for eliminating these alternatives include additional construction costs, additional construction environmental effects, additional operational costs and staffing, and additional permanent environmental effects compared to a single LMF providing Level I, II, and III maintenance in Brisbane.

17.3.3.5 Summary of Light Maintenance Facility Alternatives Evaluated for the San Francisco to San Jose Project Section

Fifteen LMF alternatives, including four LMF alternatives suggested by commenters, were considered based on site design and operational criteria that were informed by best practices and experience gained by other HSR system operators throughout the world, and which were determined by the Authority to be appropriate for construction and operation of the California HSR System. These alternatives were also considered in terms of environmental impacts. The Authority also considered the concept of a two-LMF alternative with different levels of maintenance at each facility. The Authority has conducted multiple robust evaluations of LMF alternatives and solicited public input on those evaluations, and the Authority has considered LMF alternatives suggested by commenters.

As discussed in Section 17.3.1, there is no requirement under NEPA or CEQA to evaluate every conceivable permutation or alternative in an EIR or EIS. Furthermore, under CEQA, an EIR need not include multiple variations of the alternatives evaluated nor must it consider alternatives to specific components of a project. Instead, the statutes require analysis of a "reasonable range" of alternatives. The West and East Brisbane LMF alternatives reflect more than a decade of alternatives development and LMF site evaluations based on the constraints and criteria necessary for an LMF for the Project Section.

17.4 Grade Separations

17.4.1 FJ-Response-GS-1: Requests for Grade Separations

Commenters stated that existing at-grade crossings should be grade separated as part of the project or as mitigation in order to avoid/address project effects on at-grade crossing safety, emergency response times, traffic congestion, and noise.

Grade Separation Design Requirements and Associated Environmental Impacts

Constructing grade separations to separate a rail alignment from roads can considerably widen a rail project's footprint. In addition, when grade-separating alignments, the infrastructure can extend far beyond an individual roadway crossing because rail operations require that railway slope changes must be gradual.[9] Thus, where there are at-grade roads crossing a rail alignment in close proximity to each other, any grade separation that uses a change in the railway elevation will likely require the changed elevation (whether above or below roadways) to be maintained across all the nearby at-grade crossings. In other words, it may not be possible to construct only one grade separation in some areas, where close proximity of at-grade crossings means that constructing one grade separation would then require constructing multiple other grade separations. This can increase the cost of a grade-separated rail alignment. It can also increase the costs associated with right-of-way acquisitions, require additional infrastructure, and increase construction disruption.

A fully grade-separated blended system would require constructing 39 to 41 roadway overcrossings or undercrossings (depending on the alternative selected) at the existing at-grade roadway crossings between the 4th and King Street Station and the project's southern limit of West Alma Avenue in San Jose. These existing at-grade crossings are located in highly urbanized areas with residential, commercial, mixed-use, and industrial development immediately adjacent to the rail corridor, as well as the downtown centers for cities and communities including Burlingame, San Mateo, San Carlos, Redwood, Menlo Park, Palo Alto, Mountain View, and Sunnyvale. Because of the number and close proximity of the at-grade crossings along the corridor, construction of grade separations would require partial or full acquisition of many private residential and commercial properties adjacent to the existing Caltrain right-of-way. Additionally, the integration of grade separations with the local roadway network would require the reconstruction and modification of adjacent streets and intersections. Construction activities associated with the construction of grade separations would require temporary road closures and detours and would temporarily restrict access to many properties. A fully grade-separated blended system would be inconsistent with the project objective of minimizing impacts through a reduced project footprint predominantly within existing rights-of-way.

Consideration of Alternatives that Included Grade Separations

As explained in Section 2.5 of the Draft EIR/EIS, the Authority has extensively studied the issue of grade separating the alignment between San Jose and San Francisco, initially as part of its Tier 1 environmental process, followed by its initial Tier 2 planning. Section 2.5.2, Alternatives Consideration Process and Chronology, of the Draft EIR/EIS explains that the Tier 1 system was envisioned as a fully grade-separated four-track system operating at high speeds. Section 2.5.2.1, Initial Tier 2 Planning for Four-Track System (2009–2011), and Section 2.5.2.2 explain the evolution from a fully grade-separated design as part of initial Tier 2 planning to a predominantly two-track blended system that would remain substantially within the existing Caltrain right-of-way, without full grade separation, and operate at maximum speeds of 125 miles per hour (mph). The transition to the blended system was largely a result of feedback and concerns raised by communities along the Caltrain corridor regarding the perceived magnitude of impacts on environmental and community resources of the grade-separated four-track system. For these reasons, the project alternatives evaluated in the EIR/EIS are primarily at grade

[9] HSR design (Authority 2009) for vertical curves limit the design to 0.26 to 0.4 percent per 100 feet (e.g., a change of 0.26 to 0.4 feet over 100 feet) at speeds of 125 mph. Allowed vertical curves for higher speeds than 125 mph are more gradual, and allowed vertical curves for speeds lower than 125 mph are less gradual.

between San Francisco and Santa Clara and no new grade-separated crossings are proposed. Between Santa Clara and San Jose, a grade-separated alternative is included as part of Alternative B.

Impacts Associated with At-Grade Crossings and Mitigation for Impacts Identified

The Draft EIR/EIS analyzed potential impacts associated with increased HSR trains operating at at-grade crossings as follows and did not identify a need for mitigation, in the form of grade separations, to address impacts associated with at-grade crossings, or the Authority found that grade separations were an infeasible mitigation option.

At-Grade Crossing Safety

The Draft EIR/EIS analyzes the effect of HSR train operations on safety for vehicles, bicycles, and pedestrians crossing at at-grade crossings in Section 3.11, Safety and Security, Impact S&S#14: Permanent Exposure to Rail-Related Hazards. As discussed in the Draft EIR/EIS, and as elaborated further in Section 17.8.1, FJ-Response-SS-1: At-Grade Crossing Safety, significant safety impacts are not expected related to increased HSR train crossings through at-grade crossings after consideration of existing and planned safety improvements for the Caltrain corridor. As such, no mitigation is required for at-grade crossing safety.

Emergency Response

The Draft EIR/EIS analyzes the effect of increased gate-down time on emergency vehicle response times in Section 3.11, Impact S&S#6: Continuous Permanent Impacts on Emergency Access and Response Times Due to Station Traffic and Increased Gate-Down Time. As presented in the Draft EIR/EIS, before mitigation, significant delays (> 30 seconds) to emergency vehicle response time are identified in San Francisco, Millbrae, Burlingame, Redwood City, Menlo Park, Palo Alto, Mountain View, and San Jose. SS-MM#3: Install Emergency Vehicle Priority Treatments near HSR Stations, and SS-MM#4: Install Emergency Vehicle Priority Treatments Related to Increased Gate-Down Time Impacts, include emergency vehicle priority treatments as necessary to meet the 30-second delay threshold, which may include emergency vehicle preemption equipment at traffic signals, route-based traffic signal priority control systems, emergency vehicle and transit queue bypass lanes, roadway capacity and operational improvements to facilities paralleling the rail line to improve access to adjacent grade-separated rail crossings, construction of new fire stations to reduce fire station response times in affected areas, expansion of existing fire stations to reduce fire station response times in affected areas, or increase in contracted first responder ambulance services to reduce first responder ambulance response times in affected areas. The Draft EIR/EIS identifies that these strategies, if implemented by the cities, can reduce impacts at the at-grade crossings to below the threshold impact level of 30 seconds of delay. SS-MM#4 also includes an alternative approach that the Authority and a local agency may reach a mutual agreement to have the Authority make an in-lieu payment toward other infrastructure projects including nearby grade-separation projects. The in-lieu payment would be the capital contribution that the Authority would have otherwise made to one or more of the above emergency vehicle priority treatment strategies. While SS-MM#4 includes an alternative funding approach that may support grade-separation projects, the measure does not mandate that grade separations must be part of the mitigation; it only allows an alternative approach.

Traffic Delay

The Draft EIR/EIS analyzes the effect of increased gate-down time for at-grade crossings on traffic delays at adjacent/nearby intersections in Section 3.2, Transportation, Impact TR#5: Continuous Permanent Congestion/Delay Consequences on Intersection Operations. TR-MM#1: Potential Mitigation Measures Available to Address Traffic Delays (NEPA effect only) (as revised for the Final EIR/EIS to include site-specific traffic mitigation measures) includes various standard vehicle capacity enhancements, such as signal retiming or additions, lane restriping, road/intersection widening and turn pocket additions/increases (including right-of-way acquisitions as needed). TR-MM#1 does not include grade separations as a feasible mitigation option for traffic effects because, as discussed below under Benefits and Costs of Grade Separation, grade

separations are considered cost prohibitive and grade separations would result in additional environmental impact due to displacements and large footprints.

Noise

The Draft EIR/EIS analyzes the effect of HSR train horn noise sounding at the at-grade crossings in Section 3.4, Noise and Vibration, Impact NV#2: Intermittent Permanent Exposure of Sensitive Receptors to Noise from Operations. A described in the Draft EIR/EIS, both project alternatives would result in significant (severe) noise impacts due in part to the FRA-mandated horn sounding when crossing through at-grade crossings. NV-MM#3 through NV-MM#7 include various methods to reduce noise impacts, including potential noise barriers, sound insulation, vehicle noise specifications, special trackwork, and additional design-level measures, as well as working with local jurisdictions (where they are interested and supportive) to support their establishment of quiet zones. These mitigation measures will reduce, but will not eliminate, all severe noise impacts, including some severe noise impacts associated with train horn noise at at-grade crossings. Grade separations are not identified as a potential mitigation option for noise impacts in the Draft EIR/EIS because, as discussed below under Benefits and Costs of Grade Separation, grade separations are considered cost prohibitive and grade separations would result in additional environmental impact due to displacements and large footprints.

Summary of At-Grade Crossing Impact Considerations

For at-grade crossings, the Draft EIR/EIS does not identify a need for mitigation for at-grade crossing safety impacts, describes that emergency vehicle response time impacts can be mitigated without grade separations, while noting that alternative funding arrangements can be made that might support grade-separation projects, and does not include grade separations as a potential traffic or noise mitigation option.

Benefits and Costs of Grade Separations

The Authority acknowledges that there are potential advantages to grade separation in this Project Section, including: elimination of potential train collisions with vehicles, pedestrians, and bicyclists; delay cost and time savings for motorists; fuel and pollution mitigation cost savings (from idling of queued vehicles); and improved emergency access. Some of the potential disadvantages of grade separation include: high capital costs; road closures and traffic disruptions during construction; extensive right-of-way acquisitions; life-cycle maintenance costs; aesthetic concerns due to height of elevated structures; and space-intensive designs.

The total cost of a grade-separation project is dependent on a number of factors related to:

- The specific siting of the grade separation
- Roadway geometry, utility locations and depths
- Proximity to station and existing tracks
- Other related factors, such as soil quality, surrounding land uses, etc.

The San Bruno Grade Separation Project to grade separate three crossings in San Mateo County cost $147 million, or approximately $50 million per crossing. It was completed in April 2014 and funded through a combination of Measure A tax dollars, state funds, and federal funds (San Mateo County Transit District 2011). The San Bruno Grade Separation Project required sewer relocation, temporary street closures, deep excavation and soil hauling, temporary tracks to provide a detour around the construction area (i.e., shoofly tracks), construction and maintenance of a temporary station, on-street parking removal, and adjustment of train operations. All of these elements contributed to the total cost of the project. The 25th Avenue Grade Separation Project includes three grade separations in the city of San Mateo at a cost of $180 million or approximately $60 million per crossing (Caltrain 2020b). The City of San Jose, in comments on the San Jose to Merced Project Section Draft EIR/EIS, estimated that grade separating three at-grade crossings in the Monterey Corridor (Blanchard Road, Skyway Drive, and Chynoweth Avenue) would cost between $400 million (elevating rails above streets) and $1.4 billion (lowering rails into a trench beneath streets), depending on the specific design, which indicate a cost of $133 million to $450 million per crossing. As a general rule, the cost of grade separations of

larger and more complex roadways in urban areas would be much higher than the cost of grade separations of smaller roadways outside of cities.

Overall, grade separations are a highly expensive mitigation strategy. Using an average assumed cost of $75 million to $150 million per crossing; grade separating the 39 to 41 at-grade crossings between San Francisco and San Jose could cost and additional $2.925 billion to $6.15 billion.[10] Grade separations can sometimes cost more than $150 million each depending on site-specific factors, so this estimate may be an underestimate. Also, the inclusion of grade separations for the at-grade alternative in the San Francisco to San Jose Project Section and the adjacent San Jose to Merced Project Section, which has an additional 27 at-grade crossings, could add an additional cost of $2.025 billion to $4.05 billion, for a total of cost $4.95 billion to $10.2 billion for both project sections above the current estimated costs for the at-grade alternatives included in the two project sections.

The Authority, as described in its Business Plans, has not secured funding for constructing the entire Phase 1 system, including the San Francisco to San Jose Project Section. Cost has been and will continue to be a major concern for the HSR project as a whole. Due to the high costs, construction disruptions, displacements, and environmental impacts associated with grade separations, they are not considered potentially feasible mitigation for this Project Section.

Authority Commitment to Work with Partners on Separate Grade-Separation Efforts

The Authority, in cooperation with local jurisdictions, transportation funding agencies, and state and federal agencies, would support community-initiated grade-separation efforts over time as funding becomes available. The Authority would also work with local, state, and federal partners to establish priorities for grade separations to be implemented as funding becomes available. This process would include working with local jurisdictions that are pursuing grade-separation projects on their own so the HSR project, to the extent possible, does not create conflicts with future grade-separation efforts. Finally, the Authority would also work with other rail parties to seek funding participation from multiple sources as opportunities arise.

17.5 Transportation Standard Responses

17.5.1 FJ-Response-TR-1: Site-Specific Mitigation for Traffic Impacts

Commenters stated that the EIR/EIS should include site-specific mitigation for identified traffic impacts and should analyze potential secondary environmental effects of site-specific traffic mitigation.

As described in the Draft EIR/EIS, under SB 743, and the related changes in CEQA Guidelines in December 2018, traffic congestion or delay, often measured using level of service (LOS), can no longer be considered a significant environmental impact under CEQA. The 2018 CEQA Guidelines require the analysis of vehicle miles traveled (VMT) to assess transportation metrics. Therefore, the Draft EIR/EIS provides an analysis of the project's effect on VMT. Since traffic congestion or delay is no longer considered a significant impact on the environment under CEQA, any potential project impacts resulting from an inconsistency with local plans or policies that call for maintenance of a specific LOS or to manage other aspects of traffic congestion or delay is also not considered a significant impact. CEQA does not require the identification of mitigation measures generally or for specific sites for impacts that are less than significant.

The Draft EIR/EIS, however, does analyze traffic congestion/delay relevant to NEPA requirements, including potential mitigation for any adverse effects identified. The Draft EIR/EIS evaluates temporary and permanent effects on traffic congestion/delay on intersections under the following impacts: Impacts TR#2: Temporary Congestion/Delay Consequences on Intersections from Temporary Road Closures, Relocations, and Modifications; TR#3: Temporary Congestion/Delay Consequences on Major Roadways and Intersections from Construction

[10] As described in the Draft EIR/EIS, Chapter 6, Project Costs and Operations, the capital costs (in 2018$) for Alternative A are estimated as $4.253 billion compared to $6.128 billion for Alternative B (Viaduct to I-880) and $6.858 billion for Alternative B (Viaduct to Scott Boulevard).

Vehicles; TR#4: Permanent Congestion/Delay Consequences on Intersections from Permanent Road Closures and Relocations; and TR#5. The detailed disclosure of the specific LOS/delay effects due to the project alternatives is provided in Volume 2, Appendix 3.2-A, Transportation Data on Intersections.

Mitigation for identified traffic delay/congestion effects was identified in the Draft EIR/EIS under TR-MM#1. Mitigation measures to address permanent congestion/LOS effects on intersection operations from permanent road closures and relocations, increased gate-down time at the at-grade crossings, and vehicle flow to/from HSR stations could include one or more combinations of various standard vehicle capacity enhancements. As such, TR-MM#1 identified a range of potential mitigation strategies for addressing intersection, roadway, and freeway traffic delay/congestion effects. The Draft EIR/EIS, however, did not identify the specific detailed application of TR-MM#1 on a site-specific basis.

In response to comments, the Authority conducted further analysis and developed site-specific mitigation measures for consideration that could reduce adverse traffic NEPA effects identified in the EIR/EIS. The Authority also developed *Decision-Making Guidance for the Adoption of Traffic Mitigation Measures* in February 2021 (Authority 2021), which describes NEPA requirements concerning the analysis of traffic effects and consideration of mitigation, and provides criteria for consideration and selection of traffic mitigation. Five screening criteria were identified:

- The measure does not cause an increase in VMT
- The measure would not contradict the objectives of SB 743
- The measure is not more disruptive to the community than the traffic effect itself
- The measure does not result in unmitigable secondary environmental effects
- The Authority has determined the measure is practicable

The Authority conducted a screening evaluation of the potential site-specific mitigation identified using these criteria, which resulted in the elimination of some potential mitigation measures from further consideration. The screening evaluation is included in a new Appendix 3.2-C, Screening Evaluation of Site-Specific Traffic Mitigation Measures, which describes the mitigation measures considered, presents the screening evaluation, and identifies those measures that passed the screening and those that did not (and why they did not). The measures that passed the screening have been added to Section 3.2.7, Mitigation Measures, and Section 3.2.8, Impact Summary for NEPA Comparison of Alternatives, has been revised to describe the potential effect on adverse traffic effects with the mitigation measures under consideration. Some of the mitigation will address more than one intersection. Some of the mitigation will reduce adverse effects to below the adverse effect criteria used in the EIR/EIS analysis; some will not.

As described in the Draft EIR/EIS in Section 3.2.7, depending on location and design, traffic mitigation measures can have substantial secondary environmental impacts, including construction disruption to roadways and rail operations, as well as construction noise, air pollutant emissions, visual aesthetic changes, right-of-way acquisition, displacement of residential and commercial development, encouragement of sprawl growth and associated VMT and air pollutant/GHG emissions, discouragement of compact walkable TOD, encroachment on public parks and open space, removal of trees and vegetation, and impacts on groundwater. The general analysis in the Draft EIR/EIS has been revised to assess the potential for secondary environmental impacts of the site-specific traffic mitigation measures included in the Final EIR/EIS in Section 3.2.7. Since one of the screening criteria is that mitigation measures for consideration should not result in unmitigable secondary environmental impacts, the mitigation measures presented in the Final EIR/EIS would not result in new significant impacts or substantially more severe impacts than presented in the Draft EIR/EIS.

The requirements for consideration of mitigation under CEQA and NEPA are different. While CEQA requires the CEQA lead agency to both identify and adopt feasible mitigation measures, NEPA requires a federal lead agency to consider potential mitigation but does not require a federal lead agency to adopt mitigation. As such, the Authority, acting in its delegated role as the

federal lead agency for this Project Section, can decide whether to adopt the mitigation identified for NEPA traffic effects.

17.5.2 FJ-Response-TR-2: Construction Traffic and Parking Management

Several commenters questioned how the construction phase of the HSR project would affect local roadways and bicycle, pedestrian, transit, and parking facilities.

The Final EIR/EIS evaluates conditions and potential impacts during project construction commensurate with the current level of project design and definition. At the project's present preliminary level of design, many outcomes of construction can be reasonably assumed and have been identified and evaluated in Section 3.2 of the Final EIR/EIS. For example, while the contractor's precise phasing of any planned roadway closures are currently not identified, the construction of both project alternatives would likely include temporary lane closures where four-quadrant gates would be installed at existing at-grade crossings for both alternatives, temporary closure of Tunnel Avenue in Brisbane for both alternatives, temporary road or lane closure of the Hillcrest Boulevard underpass north of the Millbrae Station for both alternatives, and temporary road or lane closures for several underpasses in the San Mateo to Palo Alto Subsection for Alternative B including the Ralston Avenue underpass in Belmont; the Holly Street underpass in Redwood City; the 25th Avenue, 28th Avenue, 31st Avenue, and 42nd Avenue undercrossings in San Carlos; the Harbor Boulevard undercrossing in Belmont; and the Brittan Avenue and Howard Avenue undercrossings in San Carlos. In the San Jose Diridon Station Approach Subsection, Alternative B (Viaduct to Scott Boulevard) includes construction of a new Lafayette Street bridge and conversion of West Hedding Street and De La Cruz Boulevard from overpasses to underpasses. Under both Alternative B viaduct options, a limited number of weekend full closures of I-280 would be required to construct the overcrossing of the freeway. These potential temporary construction-related effects have been identified and are evaluated and disclosed in the Draft EIR/EIS. However, certain other elements of project construction are currently not identified given the project's current level of design. Individual engineers and contractors will decide to execute the project differently and need to be provided with a certain level of flexibility in construction means and methods. This process, and techniques of project construction, have been described and discussed in the EIR/EIS.

To provide future engineers and contractors with an envelope of implementation flexibility, while ensuring that all project impacts are disclosed in the EIR/EIS, the project includes IAMFs that will avoid or minimize impacts on transportation and parking during construction. The IAMFs require the contractor to develop and implement plans and actions that include industry-recognized performance standards to minimize or avoid potential construction impacts. The IAMFs include construction hours, designating parking for construction vehicles, maintaining truck routes and construction for special events during project construction, maintaining bicycle and pedestrian access, protecting freight and passenger rail services, maintaining transit access, and meeting design standards and guidance for transportation facilities. All project IAMFs are included in Volume 2, Appendix 2-E of the Final EIR/EIS. TR-IAMF#1: Protection of Public Roadways during Construction, through TR-IAMF#9: Protection of Freight and Passenger Rail during Construction, and TR-IAMF#11: Maintenance of Transit Access, are most relevant to these comments.

Please refer to Section 17.2.5, FJ-Response-GEN-5: Impact Avoidance and Minimization Features, for a more detailed explanation of the IAMFs incorporated into the project.

Section 3.2 of the Final EIR/EIS evaluates the construction-related impacts of the project, at a level of detail that is sufficient to disclose the environmental impacts of the project as required by both CEQA and NEPA. The Final EIR/EIS describes and evaluates the potential types, extent, and scope of construction impacts that could occur, depending on the ultimate means and methods implemented by the contractor. The project includes IAMFs to guide and put boundaries on the contractor, to ensure that there are no additional construction-related impacts of the HSR project beyond what was disclosed in the EIR/EIS.

With respect to Impacts TR#2, TR#3, TR#6: Temporary Construction-Related Effects on Parking, and TR#15: Temporary Impacts on Pedestrian and Bicycle Access, the Draft EIR/EIS finds that

the impacts would be less than significant under CEQA based on the effects analysis and evidence presented. With respect to Impacts TR#8: Temporary Impacts on Bus Transit, TR#10: Temporary Impacts on Passenger Rail Services, and TR#18: Temporary Impacts on Freight Rail Operations, the Draft EIR/EIS finds that the impacts would be significant under CEQA based on the effects analysis and evidence presented. Please refer to Table 3.2-25 of the Draft EIR/EIS for a summary of the NEPA findings relative to these construction effects. In general, the project alternatives were found to result in similar overall NEPA effects during construction, with Alternative A being less impactful than Alternative B.

17.5.3 FJ-Response-TR-3: Gate-Down Time Calculation Details

Several commenters requested additional details on the number of trains assumed and gate-down time calculations in the Draft EIR/EIS's analysis of Alternative A. Questions regarding the total number of trains included and the assumptions/methodologies used within the gate-down time and associated traffic analyses were also raised.

The traffic operations analysis at grade crossings was performed using microsimulation models that considered vehicle volumes, traffic signal timing parameters, the number of trains at the crossing, gate-down time, and traffic signal preemption patterns (if a signal is located near the crossing and has preemption).

The number of trains per peak hour were input into the microsimulation models based on published and conceptual future schedules, consistent with the methodology used in the 2015 PCEP EIR (PCJPB 2015). Caltrain service in the study area for existing conditions includes five peak direction trips in the AM and PM peak periods. Future Caltrain service assumptions included an expansion of service to include six peak direction trips per hour (12 trains per hour total) between San Francisco and San Jose. Future service assumptions for HSR included four trains per hour per direction (8 trains per hour total) based on a conceptual schedule between San Francisco and San Jose Diridon Station that takes Caltrain movements into account. Limited freight service in the corridor was observed over the multiple days of existing conditions data collection, thus freight service in the peak hours was deemed to be negligible versus passenger train volumes.

The high number of trains in the corridor under future conditions will likely lead to grade crossing events where two trains (in opposite directions) pass each other at an at-grade crossing. The conceptual schedules used in the microsimulation modeling reflect this "2-for-1" grade crossing event possibility by modeling each train individually in their respective directions of travel. If two trains pass each other during the course of one grade crossing event, the gates at the modeled grade crossing remain down and any nearby traffic signals remain in preemption mode until the second train has passed. The analysis reflects how 2-for-1 events influence the number and duration of gate-down events and traffic signal preemption events. Ultimately, these 2-for-1 events reduce the amount of gate-down time at a crossing over the course of a peak hour because of the overlapping of trains (although the actual 2-for-1 event itself results in a longer gate-down time for that specific event).

A key input into the microsimulation models is the average gate-down time per single train event. Trains travel at different speeds throughout the system due to physical infrastructure and the presence of stations (trains travel at lower speeds as they enter and exit stations). The gate-down time for a single HSR train ranges from 39 seconds to 68 seconds, depending on a number of factors including the width of the crossing, whether the crossing is adjacent to a station, and adjacent traffic signal operations. The highest gate-down times would be at crossings adjacent to the 4th and King Street Station in San Francisco and the San Jose Diridon Station. For the remaining at-grade crossings, gate-down times for single HSR trains range from 39 to 54 seconds. Table 17-4 identifies the gate-down time assumptions used in the analysis.

Table 17-4 Single Train Gate-Down Time Values by Grade Crossing

At-Grade Crossing	Single Train Gate-Down Time Value
Mission Bay Drive (adjacent to 4th and King)	0:01:08

At-Grade Crossing	Single Train Gate-Down Time Value
16th Street	0:00:59
Linden Avenue	0:00:45
Scott Street	0:00:41
Broadway, Burlingame	0:00:42
Oak Grove Avenue, Burlingame	0:00:49
North Lane	0:00:42
Howard Avenue	0:00:49
Bayswater Avenue	0:00:47
Peninsula Avenue	0:00:46
Villa Terrace	0:00:41
East Bellevue Avenue	0:00:46
1st Avenue	0:00:44
2nd Avenue	0:00:44
3rd Avenue	0:00:41
4th Avenue	0:00:42
5th Avenue	0:00:43
9th Avenue	0:00:41
Whipple Avenue	0:00:46
Brewster Avenue	0:00:39
Broadway, Redwood City	0:00:54
Main Street	0:00:50
Maple Street	0:00:47
Chestnut Street	0:00:41
Fair Oaks Lane	0:00:43
Watkins Avenue	0:00:41
Encinal Avenue	0:00:41
Glenwood Avenue	0:00:43
Oak Grove Avenue, Menlo Park	0:00:48
Ravenswood Avenue	0:00:51
Alma Street	0:00:48
Churchill Avenue	0:00:40
Meadow Drive	0:00:40
Charleston Road	0:00:40
Rengstorff Avenue	0:00:41
Castro Street	0:00:46

At-Grade Crossing	Single Train Gate-Down Time Value
Mary Avenue	0:00:40
Sunnyvale Avenue	0:00:44
Crossings near Diridon Station[1]	0:01:08

[1] Crossings near the San Jose Diridon Station (Auzerais Avenue and Virginia Street) were assumed to have the same gate-down time as the highest crossing in the corridor, which occurs at Mission Bay Drive adjacent to the 4th and King Street Station, for analysis purposes.

With the 12 trains per hour operated by Caltrain upon completion of the electrification project, a total of 20 trains per hour would operate at peak service levels with both Caltrain and HSR at peak operation, resulting in an average cumulative gate-down time of 15 minutes per hour at the at-grade crossings.

17.5.4 FJ-Response-TR-4: Project Impacts on Freight

Extensive comments were submitted concerning the Draft EIR/EIS analysis of freight service in regards to the following: baseline data used; forecasting assumptions and horizon; analysis of construction impacts and the adequacy and feasibility of construction mitigation; operational impact analysis; the potential secondary impacts due to potential diversion of freight rail to trucks including air quality, GHG emissions, and economic impacts; and the amount of consultation between the Authority and freight services and users. This standard response discusses each of these issues.

17.5.4.1 Baseline Existing Freight Activity

Commenters suggested that the Draft EIR/EIS should be updated with more recent freight movement data than the dispatch data presented from 2012 provided by Caltrain and that the impact analysis should account for the return of empty rail cars at each stage of the analysis.

The Authority had requested more recent data from Caltrain during preparation of the Draft EIR/EIS, but Caltrain replied that the Authority should use the same dispatch data as was used in the EIR for the PCEP, noting that data was representative of current conditions. Based on comments received on the Draft EIR/EIS, the Authority requested additional data from Caltrain, and Caltrain provided detailed freight dispatch data, including times of train movements for October 2019 and daily counts of freight consist movement, lengths, and tonnage for September through November 2019 (PCJPB 2019b).

The focus of the analysis in the EIR/EIS is on the area from Control Point (CP) Coast north of the Santa Clara Station northward to the Quint Street lead in San Francisco, which is approximately 2 miles south of the Caltrain 4th and King Street Station. This is the section of the Caltrain corridor where passenger rail and freight rail operations take place on the same tracks and where the combination of the increase in HSR train operations and Caltrain train operations could affect the timing of windows available for freight rail operations. There are no freight rail operations north of the Quint Street lead in San Francisco. As described in the Draft EIR/EIS, south of CP Coast, freight operates on the dedicated track MT-1, which is owned by UPRR, although Caltrain controls dispatching of trains southward to CP Lick, which is approximately 2 miles south of the Tamien Station.

A review of the October 2019 Caltrain dispatch data indicates that freight service is roughly consistent with the description in the Draft EIR/EIS concerning the existing freight operations between CP Coast and San Francisco:

- The “South City Switcher” (also called the “South City Local”) operates in the morning and serves industries located between South San Francisco and Pier 96 in San Francisco. It makes approximately one round trip per day from the South San Francisco Yard to San Francisco. Based on 2019 data, this service on average starts around 10:00 a.m. and ends around 11:30 a.m., with an average duration in the Caltrain corridor of 1.2 hours. The 2019 data is roughly consistent with the 2012 data used in the Draft EIR/EIS.

- The “Broadway Local” operates in the evening and serves industries between South San Francisco and Redwood City, such as the Port of Redwood City. Based on 2019 data, the service on average starts around 7:15 p.m. and ends around 11:15 p.m., with an average duration in the Caltrain corridor of 3.8 hours. The 2019 data is roughly consistent with the 2012 data used in the Draft EIR/EIS, except the 2012 data indicated this service on average completed the service in slightly less time (3.2 hours), ending around 10:15 p.m.
- The “Mission Bay Hauler” operates in the evening between San Jose/Milpitas and the South San Francisco Yard and sometimes San Jose/Milpitas to Redwood City. This service gathers up the outbound train cars brought in by the other two local train services and hauls them to the UPRR yard in Milpitas, then returns with the inbound cars for distribution by local services. Based on 2019 data, the service on average starts around 7:30 p.m. and ends around 11:15 p.m., with an average duration in the Caltrain corridor of 3.6 hours. The 2019 data is roughly consistent with the 2012 data used in the Draft EIR/EIS, except that the 2012 data indicated this service took longer on average and ended service slightly after midnight.
- The “Granite Rock” service operates in the evening from south of CP Link to Redwood City (CP Junction) and hauls construction material between Watsonville and the Port of Redwood City. In the Draft EIR/EIS, this service was shown as operating only from south of CP Lick to the Newhall Freight Yard, but in 2019 this service continued to Redwood City. Based on 2019 data, the service on average starts around 9:30 p.m. and ends around midnight, with an average duration in the Caltrain corridor of 2.3 hours.

Overall, the portrayal of freight service in the Draft EIR/EIS is not substantially different when considering the more recent 2019 data provided by Caltrain. Based on 2019 dispatch data, there is an average of three round trips per weekday in the Caltrain corridor between CP Coast and San Francisco, which is the same amount of average freight service described in the Draft EIR/EIS using 2012 dispatch data. For any specific section of the corridor north of CP Coast, based on the 2019 dispatch data, there are only two round trips per weekday because not all round trips utilize all of the corridor. The freight pattern of one short round trip in the morning between South San Francisco and San Francisco and several round trips in the evening/at night between San Jose and South San Francisco described in the Draft EIR/EIS is the same pattern shown in the 2019 data. As a result, no change in the impact analysis or conclusions are necessary as a result of the updated 2019 data.

South of CP Coast, based on the 2019 dispatch data, there are various services that operate using the freight-dedicated tracks, including the “Mission Bay Hauler” and “Granite Rock” services described above, as well other freight service that serves the East Bay via the UPRR Coast Subdivision and Milpitas via the UPRR Warm Springs Subdivision or the Vasona Industrial Lead.

Due to comments questioning the Draft EIR/EIS assertion that longer trains could be utilized as one potential strategy to address potentially more constrained freight service hours and comments requesting consideration of both empty and loaded cars, the Authority also obtained data from Caltrain for September to November 2019 on freight train length, numbers of empty cars, numbers of loaded cars, and train consist length. Regarding considering both empty and loaded cars, the analysis in the Draft EIR/EIS considered all freight trains operating in the Caltrain corridor, whether hauling empty or loaded cars. The Final EIR/EIS includes a revised analysis based on this 2019 data that specifically considers baseline train lengths in the operational analysis.

The 2019 dispatch data for the Caltrain corridor is summarized in tables that have been added to the Final EIR/EIS, including information on freight train frequency, duration of moves in the corridor, average start and end times, freight train lengths, and numbers of empty and loaded cars. This information has been added to Section 3.2.5.6, Freight Rail Service, which presents existing conditions for freight rail service.

17.5.4.2 Forecasting Future Freight Activity

Comments described that cargo volumes vary year to year based on market demand and that any future forecasts should take this into account. Comments also asserted that freight volumes will increase substantially and there is momentum from the ports, UPRR, and companies that ship products to support growth that may not be expressed in adopted plans. Commenters also asserted that the planning horizon should go well beyond 2040 to be able to consider long-term effects on freight and the effect on the regional goods movement system and the regional economy.

The freight forecast used for the analysis of cumulative conditions in the Draft EIR/EIS was based on a robust 3.5 percent per annum growth factor (over 2016) that was rounded up to 4 percent growth per annum, which would reflect substantial growth. This level, however, was based on an older Caltrans estimate of annual growth that was used in the PCEP EIR (PCJPB 2015). A review of the most recent California State Rail Plan from 2018 indicates that Caltrans is now forecasting 2.6 percent growth per annum between Santa Clara and San Francisco, 1.5 percent between San Jose and Santa Clara, and 2.6 percent south of San Jose to Gilroy (Caltrans 2018). Accordingly, the Final EIR/EIS Table 3.2-23 has been updated to include the forecasted rail movements within the project corridor. The revised forecasts are lower than those presented in the Draft EIR/EIS. For example, in the Draft EIR/EIS, the total daily number of freight trains (both directions) for the Caltrain corridor from San Francisco to Santa Clara for 2040 was estimated as 5 to 10 trains, whereas with the revised forecast using the growth factors in the 2018 State Rail Plan, only 3 to 7 daily freight trains are forecasted for 2040. From Santa Clara to San Jose Diridon Station, the forecasted number of daily freight trains changed from 23 to 12. The revised forecasts using the 2018 State Rail Plan growth factors would indicate less demand for freight rail capacity than the forecasts in the Draft EIR/EIS.

While there may be momentum that freight operators and users expect to occur, no comments provided any specific plans, projections, or committed actions that would definitively result in a specific amount of growth. Regarding the use of a horizon beyond 2040, under NEPA and CEQA, analyses of future conditions must be based on the available evidence without reliance on speculation. As a state agency, the Authority relied on the latest information in the 2018 State Rail Plan regarding future freight growth and the 2018 State Rail Plan forecasts future freight demand out to 2040. While one could project growth beyond 2040, such long-term forecasts of economic conditions and goods movement demand would be highly speculative and subject to substantial uncertainty. As a result, the Authority chose to keep the analysis of future freight conditions to the timeframe that Caltrans has evaluated.

17.5.4.3 Construction Impact Analysis

Commenters asked about the underlying assumptions, analysis, and threshold of significance to justify the conclusions regarding construction-period impacts on freight service. Commenters assert that if the project routinely causes "hours or days" of service disruption over 5 years during construction, it is nearly certain that individual shippers would opt to move cargo from rail to trucks due to the time sensitivity of many shipments, including construction material such as concrete. Commenters also recommended that the analysis be supplemented by close consultation with freight rail operators and shippers to make it meaningful and realistic. Commenters asked for clarification about the potential disruptions for up to 2 years due to the passing track segment under Alternative B and asked why these potential disruptions would not lead to diversion of cargo from rail. Commenters suggested that the project should learn from Caltrain's recent experience with construction in the Caltrain corridor. Commenters asserted, based on their opinion that the project would result in substantial diversion of freight from rail to truck, that the project would result in significant secondary traffic congestion, air quality, and GHG emissions.

Commenters asserted that the project design features and measures to reduce construction freight rail impacts (TR-IAMF#9 and TR-MM#3: Implement Railway Disruption Control Plan) outlined in the Draft EIR/EIS lack detail and substance to demonstrate how they would reduce potential impacts and to ensure they would effectively reduce impacts. Specifically, commenters

stated that the features and measures lack specific performance standards and that the Authority has left enforcement of the mitigation to itself and that the mitigation represents "deferred" mitigation. Commenters suggested the mitigation should include the following: (1) a specific strategy for communicating with freight operators and shippers as early as possible about closures and delays; (2) an effort to confine closures and delays to weekends (as the EIR/EIS notes); (3) minimization of multiple days of closures and delays; and (4) inclusion of liquidated damages in construction contracts, so the costs of construction "inconveniences" would be the responsibility of contractors and the project rather than being borne by operators, shippers, and consumers.

The EIR/EIS describes the project's potential construction impacts on freight rail operations in Impact TR#18. It describes that in accordance with TR-IAMF#9, the project contractor will repair any structural damage to freight or public railways that may occur during the construction period and return any damaged sections to their original structural condition. If there is room within the existing Caltrain right-of-way and it is necessary during construction, a shoofly track may be built to allow existing train lines to bypass areas closed for construction activities where feasible. Upon completion, tracks would be opened and repaired, or new mainline track would be built, and the shoofly would be removed. Shoofly tracks are only feasible in areas with unconstrained right-of-way with adequate space and may not be feasible in constrained areas. Much of the Caltrain corridor is constrained in terms of available space; therefore, shoofly tracks would not be feasible in many locations. Shoofly tracks would not be used where they would require acquisition of temporary construction easement beyond that otherwise already required for other purposes (e.g., where a shoofly alignment would increase temporary construction easement widths outside the right-of-way beyond that which would be required without a shoofly track).

Construction would require turnout replacement, relocation, or modification, which would occur at night or on weekends, as well as track realignments. Track realignments of less than 10 feet would be done at night or on weekends and speed restrictions would be imposed until the track realignment is completed. For realignments more than 10 feet, a parallel track would be built first and then connected to the existing track. Temporary track closure for reconnecting tracks would occur at night or on weekends and would have a duration of 1 to 2 days each.

The EIR/EIS describes the specific locations of potential disruption associated with Alternatives A and B. As described in the EIR/EIS, the number of locations for potential freight disruption are limited under Alternative A to areas of realignment of tracks in several locations within each subsection and for track connections to the East Brisbane LMF. South of De La Cruz Boulevard, the project would include a new dedicated freight track between CP Coast and CP Shark with some modification of rail bridges to accommodate new track and reconfiguration of the Michael Yard with additional connections to storage tracks. Alternative B would have the same potential disruption areas as Alternative B north of Scott Boulevard, except for relocation of the Bayshore Caltrain Station, connections to a West Brisbane LMF, and during construction of the passing track sections between southern San Mateo and northern Redwood City. South of Scott Boulevard, Alternative B would require relocation of freight tracks and would have likely weekend shutdown for several days during track connections. Freight would be rerouted to alternative tracks at times during Diridon Station construction. Regarding the disruption associated with the passing track segment under Alternative B, as noted in the EIR/EIS, freight would need to be limited to overnight hours for up to 2 years but would still be able to operate at night (i.e., except during track connections, one track is expected to be made available for freight operations throughout the 2-year period).

To provide further clarification of the potential disruptions during construction, the Authority conducted additional analysis on the potential nature, location, and extent of freight disruptions along both the Caltrain corridor mainline and to freight rail facilities (such as yards) due to construction of Alternative A and B. This additional information has been added to Impact TR#18 in the Final EIR/EIS. The specific locations of track closure have been identified and would be restricted to up to 16 nights in Brisbane for the Brisbane LMF flyover construction (Alternatives A and B) and 3 weekends of track closure associated with passing track construction (Alternative B only). The extent of potential single tracking has also been identified by subsection. The location

and extent of potential effects on rail freight facilities (spurs and yards) has been identified, including 16 nights of access limitations for the Brisbane LMF flyover construction (Alternatives A and B) and 4 months of overnight only access in the Brisbane area and in the South San Francisco Yard during the most intense period of passing track construction (Alternative B only).

Regarding learning from Caltrain's experience with managing effects during recent construction projects, the Authority has been and will be coordinating with Caltrain concerning all aspects of construction within the Caltrain corridor. TR-MM#3 was initially developed based on a similar measure included in the Caltrain PCEP EIR and has been modified in the Final EIR/EIS in response to comments.

In consideration of the additional more specific analysis of potential effects during construction and suggestions made in comments, TR-MM#3 has been revised to include the following additional requirements:

- Establish a freight stakeholder committee to provide an information and feedback forum throughout construction with a minimum of quarterly coordination meetings.
- Consult with Caltrain, UPRR, and freight operators and shippers during preparation of the construction disruption plan, including provision of a draft plan for comment prior to completion.
- Notify Caltrain, UPRR, and freight operators of planned closures at least 3 months prior to planned track closures or planned closure of access to freight rail facilities (including spurs and yards).
- Schedule track closure and single tracking to one subsection at a time to avoid cumulative closure and delay effects.
- Prepare track closure contingency plans for every proposed track closure describing the duration of closure and the alternative arrangements to facilitate freight operations, including approval of freight operations during daytime on weekdays if feasible and approved by Caltrain.
- Where feasible, limit closure of any tracks for construction activities to periods when train service is less frequent (e.g., weekends, or midday and late evening periods on weekdays).
- Where one open track cannot be maintained for freight use, limit multitrack closures to one location at a time, as much as feasible.

Based on the analysis in the Draft EIR/EIS and the revised analysis in the Final EIR/EIS, for the most part, freight operations would be able to continue throughout project construction. Closures would overall be limited in extent and occur during nights and weekends, with accommodation for alternative daytime operations where allowed by Caltrain and necessary to address nighttime closures. The existing trackage rights agreement (TRA) only specifies that freight has rights to use a single track during one daytime 30-minute window and between midnight and 5 a.m. In most cases, freight access consistent with the TRA would be provided throughout project construction, with some discrete exceptions and locations, but overall freight service would be able to operate and freight capacity would remain sufficient to accommodate baseline freight volumes.

The Final EIR/EIS concludes that with TR-MM#3 the level of disruption would be minimized, and the disruption is not expected to result in diversion of freight carried by rail to other modes (such as trucks) or any associated secondary environmental effects and thus the project, with mitigation, would result in a less-than-significant impact under CEQA. The conclusions in the EIR/EIS are based on the identification of the discrete locations and extent of disruptions, and the identification of practical methods to avoid and minimize disruption to freight service, including advanced coordination with Caltrain, UPRR, and freight users about the timing for construction activity, the use of shoofly tracks (where right-of-way space allows), scheduling of track connection work to minimize disruption, and maintenance of at least one available track overnight throughout construction (except at discrete locations and for limited periods of time).

17.5.4.4 Operational Analysis of Effects on Freight Rail Service

Regarding potential operational effects on freight rail service, commenters raised concerns regarding the TRA, HSR and freight operating hours and windows, and whether freight operations could be accommodated with more limited work windows; the feasibility of using longer trains, additional trains, or staggered deliveries as adaptive strategies to address constrained windows; and effects on other freight facilities (such as yards). Commenters also questioned the relevance of citing other rail systems to support the impact analysis conclusions. Each of these issues is addressed in the following subsections.

Trackage Rights Agreement

Comments asked for clarification regarding whether the existing TRA would still be in force with the project and whether it would be amended in the future, and asserted that the TRA does not stipulate that freight trains must operate at speeds up to 79 mph during the 30-minute daytime operating window.

As the host railroad, Caltrain is required to meet existing TRAs that require:

- Provision of a window for freight service whenever there exists a period of at least 30 minutes headway between passenger trains.
- Between 10:00 a.m. and 3:00 p.m., at least one 30-minute headway window on each track will be provided for freight trains that are capable of operating at commuter service train speeds and "will operate at such speeds when directed by the owner."
- Between midnight and 5:00 a.m., at least one main track will always be in service for freight and intercity passenger service.

To operate on the Caltrain corridor, the Authority would also be required to enter into a TRA with Caltrain. It is expected that any such agreement would be aligned with existing agreements for other operators.

Authority operational planning analysis, undertaken jointly with Caltrain, showed that while passenger train volumes would be higher than those experienced without HSR services, the headway improvements available under the new train control system proposed by the Authority would increase available capacity beyond that required to accommodate the additional services. As such, it would be possible in the future to meet the daytime requirements above.

The indicative blended service timetables developed jointly between Caltrain and the Authority do not extend passenger service hours beyond the current operating times. As such, blended operations would not affect the ability of freight service to operate overnight as it does currently and to meet the nighttime requirements described above.

Should freight operators require any changes to trackage rights in the future, Caltrain would take the lead in any negotiations and the Authority can confirm that it would work collaboratively with all parties, as necessary.

Regarding the citation of 79 mph in the Draft EIR/EIS concerning "commuter service train speeds," the TRA itself does not reference a specific speed. As a result, the reference to 79 mph in the Draft EIR/EIS has been deleted. While the TRA does not reference a specific speed, Caltrain routinely reaches 79 mph on straight sections of track between San Jose and San Francisco at present.

Operating Hours and Windows for HSR and Freight

Commenters asked for clarification regarding the expected HSR operations during peak and off-peak hours and the specific expected windows available for freight operations, and asserted that freight operations cannot be completed with more constrained work windows.

Regarding HSR operations, the Authority expects to operate up four trains pphpd between San Jose and San Francisco and up to seven trains pphpd south of San Jose. During off-peak hours, HSR expects to operate up to three trains per hour per direction between San Jose and San

Francisco and up to four trains per hour per direction south of San Jose. HSR revenue service would be conducted between 6:00 a.m. and midnight.

Regarding freight windows of operation with the project and the ability to accommodate freight operations with more constrained work windows:

- The “South City Switcher” (also called the “South City Local”) operates in the morning, serves industries located between South San Francisco and Pier 96 in San Francisco, and makes approximately one round trip per day from the South San Francisco Yard to San Francisco. Based on 2019 data, this service on average starts around 10:00 a.m. and ends around 11:30 a.m., with an average duration in the Caltrain corridor of 1.2 hours. As stated in the Draft EIR/EIS, since this freight move operates during off-peak hours and is of short duration, daytime operations of this service can be accommodated. Even with expected limited growth by 2040 (as described in the revised forecast in the Final EIR/EIS), there is adequate time to maintain this as a daytime service between peak hours.
- Based on the October 2019 data, the “Broadway Local” service on average starts around 7:15 p.m. and ends around 11:15 p.m., with an average weekday duration in the Caltrain corridor of 3.8 hours with only infrequent trains taking more than 5 hours (two trains in October 2019). The “Mission Bay Hauler” service on average starts around 7:30 p.m. and ends around 11:15 p.m., with an average duration in the Caltrain corridor of 3.6 hours with only infrequent trains taking more than 5 hours (only one train in October 2019). The “Granite Rock” service on average starts around 9:30 p.m. and ends around midnight, with an average duration in the Caltrain corridor of 2.3 hours (and none taking longer than 3.5 hours). As discussed in the Draft EIR/EIS, early evening access for these services may be difficult to provide due to conflict with passenger train congestion during the peak hours. Based on the average service durations, these services should be able to complete normal round-trip service in less than 4 hours most of the time, which could be accommodated either through later evening and night operations or, if necessary, between midnight and 5 a.m. outside of HSR and Caltrain operational times. Infrequently, freight operators may not be able to be complete round-trip service in a single night using a single train if the freight moves are particularly challenging and complex and take more time than current trains. In these infrequent conditions, trips may need to be staggered over several nights, as is currently done on the South City Local between South San Francisco and San Francisco. Alternatively, freight operators could employ additional trains operating in each direction (one-way transit per night) or longer trains in order to maintain the same level of service as a round trip that they could otherwise complete in a single night.
- Based on the revised 2040 forecast, the average number of freight trains between South San Francisco and San Francisco could rise from two to three, and the average number of freight trains between San Jose and South San Francisco could rise from four to seven in 2040. With the new train control system to be installed in the Caltrain Corridor, in concept the system would operate with headways (e.g., time between trains) of 3 minutes, allowing up to 20 trains per hour per direction to be accommodated on the system during peak hours with passenger trains operating at similar speeds and with compatible stopping patterns. With a mixture of services with differing speed profiles (e.g., passenger trains and freight trains) or stopping patterns, the capacity would be lower. Sogin et al. (2013) evaluated freight track capacity assuming trains operating at 50 mph with average train lengths of 6,300 feet (much longer than average trains used in the Caltrain corridor) and identified that single-track freight lines are considered congested at 36 trains per day and double-track freight lines are considered congested at 64 trains per day. Between midnight and 5 a.m., while there would be some non-revenue passenger trains on the Caltrain corridor, the dedicated single track for freight would be maintained (as required in the TRA), so at least one track would function as a freight-dedicated line. Even though the study cited above was for tracks with much longer freight trains, if one divided the estimated single-track daily capacity of 36 freight trains (without congestion) to account for 5 hours (instead of 24 hours), the nominal freight capacity between midnight and 5 a.m. would be approximately seven to eight trains per night. Given the shorter trains used in the Caltrain corridor, the capacity is expected to exceed this

estimate. There are also expected to be some freight slots available at night prior to midnight following passenger rail peak hours. As such, baseline and forecasted freight volumes to 2040 are expected to be accommodated with blended Caltrain and HSR service.

Use of Longer Trains, Additional Trains, or Staggering Deliveries

Comments assert that if operational freight windows are constrained, longer trains or additional trains would not work as an adaptive strategy because freight rail operations are already highly constrained and there is only limited capacity for the staging of rail cars within UPRR's railyard facilities and spur facilities operated by shippers (such as Graniterock and Darling). Commenters also asserted that staggering freight rail service over several nights would not work because of time constraints and needs of customers and because it would reduce effective nightly capacity.

Regarding the potential to use longer trains for the limited situations when deliveries cannot be made in a single night due to somewhat more constrained nighttime work windows, based on the October 2019 freight dispatch data that has been added to the Final EIR/EIS, freight operators are using a range of train consist lengths for the existing service:

- The "South City Local" service between South San Francisco and San Francisco is using train consists with an average length of 420 to 440 feet, but on occasion trains can be up to approximately 1,400 to 2,900 feet in length.
- The "Broadway" service between Redwood City and South San Francisco is using train consists with an average length of 600 to 630 feet, but on occasion trains can be up to approximately 1,000 to 1,400 feet in length.
- The "Mission Bay" service between San Jose and South San Francisco is using train consists with an average length of 380 to 730 feet, but on occasion trains can be up to approximately 1,500 to 1,900 feet in length.
- The "Granite Rock" service between Watsonville and Redwood City is using train consists with an average length of 760 to 1,100 feet, but on occasion trains can be up to approximately 2,100 to 2,250 feet in length.
- The average length of all freight trains that operated during October 2019 was approximately 600 feet but ranged up to nearly 3,000 to 5,500 feet in length.

The difference between the average train consist length and the maximum train consist lengths in October 2019 data is between two and three times or more (i.e., the maximum train length used in practice is two to three times or more the average train consist length). This indicates that in general, existing freight rail facilities used for the existing rail services can and do accommodate trains of greater than average length on occasion. There may be other constrained facilities beyond the mainline yard facilities that could constrain the use of longer trains to address more limited work windows; however, as noted in other responses, adequate time is expected to be available to accommodate current and forecasted train volumes, which may obviate the need for longer trains.

Regarding the potential to use additional trains for the limited situations when deliveries cannot be made in a single night due to somewhat more constrained nighttime work windows, there is additional capacity beyond current freight service levels, even if only accounting for the midnight to 5 a.m. period and use of only one track.

Regarding staggering trains over two nights in limited situations when deliveries cannot be made in a single night due to somewhat more constrained nighttime work windows, Caltrain dispatch data shows that current freight rail service does currently use this strategy on occasion.

Running longer trains, adding additional trains, or staggering trains are not expected to be strategies that freight operators would use on a routine basis because there is adequate capacity to accommodate both baseline and 2040 forecasted trains along the Caltrain corridor. Thus, these strategies are expected to be employed only infrequently.

Potential Effects on Other Freight Facilities South of CP Coast

Commenters described that while effects would be highest between CP Coast and San Francisco, the compression of freight rail hours would have a ripple effect throughout the system due to the highly interconnected nature of the rail system, causing delays south of CP Coast, including the tying up and idling of rail cars and disruption of yard operations south of CP Coast affecting operations of other shippers in this area.

Blended Caltrain/HSR operations are not expected to constrain daily or nightly freight rail operations in a way that would change the ability to provide baseline and forecasted 2040 freight service between CP Coast and San Francisco. There would remain adequate capacity to complete train moves based on the baseline train volumes and durations of operations within the Caltrain corridor, and adequate capacity to accommodate the forecasted 2040 freight service. Since freight service can be accommodated on a daily and nightly basis, project operations are not expected to result in tying up or idling rail cars or disruption of yard operations south of CP Coast.

Reference to Comparable Other Areas

Commenters questioned the relevance of the footnote on page 3.2-94 of the Draft EIR/EIS, referring to the use of longer trainsets or staggering over several nights as "common practice on other light-density freight lines shared with transit such as the River Line in New Jersey and some of the San Diego Trolley System," asserting that there is no evidence that these other rail lines bear any resemblance to the project area in terms of service volume, layout, and potential conflicts.

The footnote on page 3.2-94 of the Draft EIR/EIS was intended only for informational purposes and to indicate that these practices are not unprecedented. The reference to these other systems was not the basis for any conclusions in the Draft EIR/EIS. The footnote has been deleted in the Final EIR/EIS to avoid any confusion.

Conclusion Regarding Diversion of Freight Rail to Trucks during Operations

Based on the analysis in the Draft EIR/EIS, as amplified and clarified by revisions in the Final EIR/EIS, and as discussed in this standard response, baseline and 2040 freight operations are expected to be able to operate within the Caltrain corridor without disruption due to blended Caltrain/HSR operations under nearly all conditions in those areas north of CP Coast where Caltrain, HSR, and freight would use the same track. There may be infrequent occasions where freight operators may need to use adaptive strategies, such as longer trains, additional trains, or staggered deliveries, but the infrequent use of these options is not expected to disrupt freight operations overall. Due to this accommodation of current and forecasted 2040 freight service, the project is not expected to result in substantial diversion of rail freight to trucks.

17.5.4.5 Secondary Impacts

Commenters asserted that there would be substantial diversion of rail to truck shipments, and that would result in a significant impact on VMT, air quality, GHG emissions, traffic operations, and economics, including cost to businesses that ship products via rail and impacts on the region's competitiveness.

Based on the analysis in the Draft EIR/EIS, as amplified and clarified by revisions in the Final EIR/EIS, and as discussed in this standard response, construction effects would be limited in duration and extent. The Authority would work with Caltrain, UPRR, and freight operators and users to avoid and minimize disruption of freight service, and baseline and 2040 freight operations are expected to be able to operate within the Caltrain corridor without substantial disruption or interference due to blended Caltrain/HSR operations. As such, the project is not expected to result in substantial diversion of rail freight to trucks. Given this lack of substantial diversion, significant secondary effects on VMT, air quality, GHG emissions, or traffic operations are not expected. In addition, with no substantial diversion expected, the project effects on freight are not expected to result in associated changes in economics or costs to businesses that ship products via rail or the region's competitiveness.

17.5.4.6 Outreach and Coordination

Commenters requested that the Authority meet with UPRR, the ports, the Peninsula Freight Rail Users' Group (PFRUG), and key freight-dependent users (such as Graniterock and Darling) that ship major portions of their material by freight rail prior to finalizing the EIR/EIS. Commenters suggested that the Authority also work with these stakeholders during the detailed design phase, during development of the construction plans to minimize freight disruptions, and throughout construction to fulfill the goals of the identified mitigation.

Representatives of PFRUG have attended six Community Working Group meetings for the Project Section in 2016, 2019, and 2020. PFRUG has provided input concerning freight rail operators and users through that participation. The Authority is also coordinating with UPRR periodically in relation to the entire HSR system. The Authority appreciates the concerns of freight operators and users and the time that these entities have taken to submit detailed comments regarding the Draft EIR/EIS.

TR-MM#3 has been modified in the Final EIR/EIS to include consultation with freight rail stakeholders during the detailed design phase, including during preparation of the construction rail disruption control plan, and throughout construction.

17.6 Public Utilities and Energy Standard Responses

17.6.1 FJ-Response-PUE-1: Major and High-Risk Utilities/Utility Infrastructure

Commenters identified public utility infrastructure that would overlap with the project but are not identified as major utilities in Section 3.6, Public Utilities and Energy, and Volume 2, Appendix 3.6-A, Public Utilities and Energy Facilities, of the Draft EIR/EIS. Commenters inquired as to the procedures the Authority would use to identify and relocate/protect public utilities and asked whether the Authority would comply with specific local ordinances and other local government requirements for public utility relocation/protection for both major and minor utilities.

The Authority has made reasonable efforts to identify the locations of all utilities within the project footprint as part of its Preliminary Engineering for Project Definition (PEPD). The PEPD provides the basis for the environmental analysis and is at a level of design sufficient for disclosing the environmental impacts of the HSR project. Major utility and high-risk utility data were compiled by the engineering team to inform the preliminary engineering designs, which were developed using available data from as-built plans, utility company records, and city records. Utilities were incorporated into Volume 3 of the EIR/EIS according to the Authority's PEPD guidelines. Appendix 3.6-A lists all known utility conflicts that are identified on the PEPD drawings. Table 3.6-3 was developed from Appendix 3.6-A by tabulating utilities by type, subsection, and alternative. Appendix 3.11-A, Safety and Security Data, Table 8 identifies high-risk utilities that would be crossed by or run parallel to the project alternatives.

Information provided by commenters is appreciated by the Authority, and any applicable utility infrastructure identified by commenters has been added to Section 3.6 of the Final EIR/EIS. These additions did not result in any changes to the impact analysis or mitigation measures in the Draft EIR/EIS. The Authority is actively working with utility owners to integrate additional existing and planned utilities into project design, as described in Section 17.6.2, FJ-Response-PUE-2: Coordination with Local Government Entities and Utility Owners.

17.6.2 FJ-Response-PUE-2: Coordination with Local Government Entities and Utility Owners

Several commenters requested that the Authority comply with locally adopted requirements when it addresses construction impacts on local government facilities or relocation of utilities.

Coordinating with local government entities and utility owners is incorporated in the project (PUE-IAMF#4: Utilities and Energy). Since the beginning of the development of the project, the Authority has coordinated with local government entities and utility owners, including throughout the development of the alternatives analysis and Draft EIR/EIS phases. The Authority will continue this coordination through the final design and engineering phases. The Authority uses

MOUs and cooperative agreements to establish its working relationships with local governments along the HSR alignment in each project section as it moves forward with project implementation. Similarly, the Authority uses master agreements with utility companies that establish the working relationship and terms on how to relocate and modify existing utilities that would be affected by construction activities. The utility agreements/task orders executed with local government agencies and utility companies specify the terms and precise standards to relocate or protect in place existing affected facilities or utilities and provide the obligations on the parties for engineering design, construction, costs, invoicing procedures, and coordination. These agreements also set forth the mutual expectations of the parties to the agreement as to the consultation and review role of the local government or utility company over the course of design development.

Many of the specific utility connection issues and relocation sites cannot be known until the Authority is engaged in final design and the utility or municipal services providers share information on the impact of the selected alternative on their existing facilities. During the development of the final design, the Authority will coordinate with utility owners and local districts and agencies to refine this information. Additional utilities and facilities will be identified and evaluated during the final design phase. The development of the final design would follow all applicable state laws requiring use of a utility locator service and manual probing for buried utilities within the construction footprint prior to initiating ground-disturbing activities. The Authority will coordinate with utility owners during final engineering design and construction of the project alternatives to remove, realign, relocate, or otherwise modify utilities within the right-of-way, protect them in place, or abandon them in place within the right-of-way (PUE-IAMF#3: Public Notifications, and PUE-IAMF#4).

The Authority uses industry standard practices for addressing local government and utility company facilities and utilities. The Authority generally ensures that overall local government/utility company facilities and utilities function in a materially equivalent manner as prior to the relocations, modifications, or impact. The Authority also generally ensures that the design of the relocations or modifications of facilities and utilities meets the local government entity's or utility company's (as applicable) published (or, if not published, established) design standards in place (usually at the time of agreement execution or the time of final design). The Authority's response is subject to the Authority's evaluation of whether the relocations or modifications will result in beneficial results for the community or some level of cost sharing.

17.7 Hydrology and Water Resources Standard Responses

17.7.1 FJ-Response-HYD-1: Sea Level Rise and Climate Change Adaptation

Commenters expressed concern about how the project would adapt to sea level rise and climate change.

The Authority appreciates the public's concerns regarding how the Project Section would adapt to the effects of sea level rise and climate change. While the science is clear that global temperatures are increasing and this rise in temperatures will cause sea levels to rise, among various other environmental effects such as changes in the distribution and intensity of rainfall and drought, the speed and degree to which these effects will become apparent are not known with much precision. For this reason, the Authority has endeavored to ensure that the entire HSR system is prepared for these global changes to safeguard the public's investment in this transportation infrastructure in compliance with applicable laws and regulations. To address comments received on the Draft EIR/EIS, updates have been made to Section 3.8.10, Vulnerability and Adaptation to Sea Level Rise, in the Final EIR/EIS to include additional and clarified narratives about the potential effects of sea level rise on the project.

On November 14, 2008, Governor Arnold Schwarzenegger signed EO S-13-08. This EO directs all state agencies planning to build projects in areas vulnerable to future sea level rise to consider a range of sea level projections for the years 2050 and 2100, assess project vulnerability, and, to the extent feasible, reduce expected risks and increase resiliency to sea level rise. The Authority is an agency of the State of California, and therefore, this EO applies to the Project Section.

Additionally, the federal Coastal Zone Management Act of 1972 requires projects to be planned, located, designed, and engineered for the changing water levels and associated impacts that might occur over the duration of the development. Within the Bay Area, the Coastal Zone Management Act is administered by the San Francisco Bay Conservation and Development Commission (BCDC). Because specific portions of the Project Section are within the coastal zone administered by BCDC, those portions of the project need to consider potential future changes in sea levels. Furthermore, BCDC will not issue a permit to construct those portions of the project in the coastal zone unless the Authority demonstrates that the Authority has considered potential changes in sea levels in the planning, design, and long-term operation of the project.

At present, the federal CEQ does not have any final adopted guidance in effect concerning addressing climate change in EISs under NEPA. Although CEQA and the CEQA Guidelines require an EIR to analyze the impacts of a project's GHG emissions, it does not generally require evaluation of the impacts of climate change on the project. The focus of CEQA is on the significant effects of the proposed project on the environment, and therefore, generally does not require analysis of the existing environment's effect on the project unless the project itself exacerbates an existing environmental risk or hazard (Cal. Code Regs. § 15126(a); *California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal. 4th 369). Construction and operation of the Project Section would not cause sea levels to rise more quickly or to a higher elevation (i.e., exacerbate an existing environmental risk). Therefore, the Authority is not required under CEQA to analyze the impacts of sea level rise on the project (e.g., how future sea level rise or future flooding/runoff conditions in combination with sea level rise could affect the operations of the HSR system) or consider mitigation measures to address such effects.

Nevertheless, the Draft and Final EIR/EIS provide information about sea level rise and the potential vulnerabilities of the project to inform the public about these issues, demonstrate compliance with EO S-13-08, and provide background information relative to the project's permitting process with BCDC.

Both project alternatives, Alternative A and B, would provide a blended corridor with Caltrain, where both HSR and Caltrain locomotives would share the same tracks. PCJPB owns and operates Caltrain and the existing railroad corridor within which Caltrain and HSR would operate under both project alternatives. Accordingly, the Authority would be a tenant within the railroad corridor on the tracks owned by PCJPB. As the property owner, PCJPB has the primary responsibility for ensuring the overall rail corridor adapts to and remains resilient in the face of sea level rise and climate change, including the mainline tracks between San Francisco and San Jose, stations, and associated infrastructure. PCJPB, in the PCEP EIR (PCJPB 2015), has committed to both short-term and long-term sea level rise and climate change adaptation measures for the existing Caltrain corridor. Where the Authority has an interest in ensuring a shared facility is resilient, such as the multimodal Millbrae Station that would serve Caltrain, BART, and HSR, the Authority would consider participating in and funding Caltrain's future climate change adaptation efforts.

For areas of the Project Section that would be owned and operated by the Authority that are susceptible to the effects of sea level rise or other vulnerabilities posed by a changing climate, the Authority would be responsible for climate change adaptation. At this time, the only areas that would be owned and operated by the Authority (i.e., outside of PCJPB/Caltrain's property) that would be vulnerable to the effects of sea level rise are the proposed East (Alternative A) or West (Alternative B) Brisbane LMF and associated storage tracks within the boundaries of the LMF.

Over the coming years and decades, the science surrounding climate change and sea level rise will continue to improve, and the projections of likely sea level rise increases will become more accurate and precise. As a design-build project, the Authority has not yet initiated the final design phase of the Project Section. When the final design phase commences, the Authority will be required to comply with the most up-to-date state guidance and regulations for planning, designing for, and adapting the project to sea level rise and climate change. The preliminary design plans do not specify all of the short-term and long-term measures that would ensure the

project remains unaffected by sea level rise 30 years (2050) and 80 years (2100) after construction because identifying these specifics during the final design phase, when newer and more accurate sea level rise projections are available, allows the design engineers to identify long-term adaptation measures with better accuracy and precision.

With this in mind, the Authority has already identified specific portions of the project alternatives that would need to implement some form of a near-term engineering or long-term adaptation measure to remain resilient with rising sea levels. To identify these vulnerable areas, including areas owned by the PCJPB and those owned by the Authority, the Authority reviewed the *State of California's Sea-Level Rise Guidance*, 2018 Update (California Natural Resources Agency and California Ocean Protection Council 2018). This state guidance document provides the latest sea level rise projections for California, and the State of California requires it to be used to evaluate potential vulnerabilities to sea level rise for projects within the coastal zone. This state guidance document provides a range of emissions scenarios for each decade through the year 2150 and the associated increase in average sea levels. Furthermore, specific probabilities are associated with each of these emissions scenarios and the associated increase in sea levels. These probabilities ranged from 50 percent (i.e., a 1-in-2 chance that sea levels would rise by a specific height) to 0.5 percent (i.e., a 1-in-200 chance that sea levels would rise by a specific height).

After reviewing these projections for sea level rise, the Authority, the Authority's Sustainability Team, and the design engineers used the probabilistic projections of sea level rise in the *State of California's Sea-Level Rise Guidance*, 2018 Update, with the lowest chances of occurring (i.e., largest increase in average sea levels) to identify the project's vulnerabilities and as the benchmark to which the project must adapt. While the criteria for the final design phase are still being finalized, the Authority is likely to require the project to be designed to remain resilient and operational with a 1.4-foot increase in sea levels by 2050 and a 4.4-foot increase in sea levels by 2100 (5 percent probability of occurring). Furthermore, the Authority is identifying the project's vulnerabilities with a 1.9-foot increase in sea levels by 2050 and a 6.9-foot increase in sea levels by 2100 to understand a worst-case scenario (0.5 percent probability of occurring). Although other, higher, extreme projections of sea level rise exist, these projections are not tied to a specific probability of occurring. Because science cannot currently associate extreme sea level rise projections with a specific probability of occurring, they are not proposed for use in near-term and medium-term adaptation strategies for sea level rise but would be considered in the long-term adaptation strategy for the project as a contingency.

The design of the East and West Brisbane LMF has been developed with the current projections for 2050 and 2100 under high emissions scenarios. The current design specifies that the ground elevation of the West Brisbane LMF would be at 22.5 feet North American Vertical Datum of 1988 (NAVD 88) and the ground elevation of the East Brisbane LMF at 18.5 feet NAVD 88. With 1.9 feet of sea level rise in 2050 (0.5 percent probability of occurring), the water surface elevation of San Francisco Bay would be at 11.9 feet NAVD 88 during the 100-year high tide. With 6.9 feet of sea level rise in 2100 (0.5 percent probability of occurring), the water surface elevation of San Francisco Bay would be at 16.9 feet NAVD 88 during the 100-year high tide. Therefore, based on the current design and projections of sea level rise, the ground surface of the East or West Brisbane LMF would not be susceptible to flooding during the 100-year high tide in either 2050 or 2100 under the 5 percent and 0.5 percent probability scenarios.

For these reasons, construction of the LMF would not affect water quality or flooding patterns with projected sea level rise in 2050 and 2100. Because the ground elevation of the LMF would be higher than projected sea level rise in 2050 and 2100, vehicles, equipment, materials, and infrastructure at the LMF located on or above the ground are currently expected to be protected from the effects of sea level rise over the long term. Therefore, these items would not be exposed to Bay waters in such a manner that would create water quality issues. Additionally, earthwork required to construct the LMF would not expose more of the adjacent community in Brisbane west of the LMF to sea level rise, because the ground surface would be above the water surface elevation of San Francisco Bay in 2050 and 2100. The ground surface within the proposed LMF sites is currently above sea level rise projections for 2050 and 2100, and would remain above

these projections after construction of the project. Furthermore, the construction of impervious surfaces atop wetlands within the proposed LMF sites would have no effect on sea level rise.

The Project Section would also realign portions of Tunnel Avenue and Lagoon Road near Brisbane Lagoon, including a new bridge structure that would cross over the mainline and lead tracks for the LMF. As a tidally influenced waterbody, water levels in Brisbane Lagoon would increase with sea level rise. In the existing condition, Lagoon Road, located along the northern shore of Brisbane Lagoon, is above 0.5 percent probability sea level rise projections for 2100 during the 100-year high tide except where it approaches Sierra Point Parkway, a frontage road between the eastern shore of Brisbane Lagoon and US 101. In this area, Lagoon Road would become vulnerable to sea level rise sometime between 2050 and 2100 (0.5 percent probability) and adaptation measures such as realigning the entire road or raising its profile would need to be considered. Around the year 2100, the proposed Tunnel Avenue bridge would be nearing the end of its useful life. Therefore, sea level rise adaptation measures for Lagoon Road and the proposed Tunnel Avenue overcrossing could be contemplated at the same time, when Lagoon Road would become vulnerable to inundation and the bridge would need replacement. As a local roadway, adaptation of Lagoon Road to sea level rise would be the responsibility of the local agency. For these reasons, the Authority believes the proposed realignment of Tunnel Avenue and Lagoon Road would be resilient within their useful lives, and this design would not shift additional costs of sea level rise adaptation onto local agencies and taxpayers.

As described in Section 3.8.10 of the Draft and Final EIR/EIS, the Authority would incorporate features into both project alternatives during final design that would ensure the LMF and areas within BCDC's jurisdiction would be resilient with projected sea level rise in 2050. Proposed near-term adaptation measures and the long-term adaptation strategy would be based on coordination with BCDC's permitting process. Adaptation features, such as floodwalls, pump stations, berms, and raising the profile of the rail would address effects from sea level rise over the near term with design modifications that would avoid or minimize potential effects in the year 2050. If development of the Brisbane Baylands project, consistent with the City of Brisbane's 2018 General Plan Amendment, proceeds adjacent to the LMF, then the flood protection improvements would need to be coordinated with that adjacent development.

To address the long-term effects of sea level rise, the Authority would prepare a sea level rise vulnerability assessment and adaptation plan. Because the project proposes an electrified, blended corridor utilized by both Caltrain and HSR along most of its length, a unified approach must be developed with Caltrain to protect shared infrastructure and assets from the threat of sea level rise. The Authority would participate in and provide support to the sea level rise vulnerability assessment and adaptation plan that the PCJPB committed to in the PCEP EIR (PCJPB 2015). Additionally, the Authority would amend the sea level rise vulnerability assessment and adaptation plan with only the dedicated HSR facilities introduced by the project alternatives. The Authority would consider a variety of methods to identify and rectify vulnerabilities, including an adaptation pathways approach. The Authority would also consider partnering with local jurisdictions on local and regional sea level rise adaptation measures, including the construction of nature-based shoreline adaptation strategies where applicable as well as the projects identified in documents such as Sea Change Burlingame, *Coyote Point Sea-Level Rise Vulnerability Assessment* (County of San Mateo 2019), and Millbrae *Sea Level Rise Adaptation Assessment* (City of Millbrae 2020) where they would protect dedicated HSR facilities.

Additional information about sustainability and climate change is available at the Authority's website: https://hsr.ca.gov/programs/green_practices/.

17.8 Safety and Security Standard Responses

17.8.1 FJ-Response-SS-1: At-Grade Crossing Safety

Commenters expressed concern that the increased number and speed of HSR trains and speed transiting through at-grade crossings would result in a significant safety impact on vehicles, bicycles, and pedestrians using those at-grade crossings.

Existing safety conditions, existing safety regulations, and the safety impacts of the HSR project are analyzed in Section 3.11 of the EIR/EIS. The specific potential impacts related to the proposed addition of HSR trains transiting through existing at-grade crossings are discussed in Impact S&S#14.

The operation of the HSR system would meet or exceed federal safety requirements for train operations for all at-grade crossings. The project would upgrade all existing at-grade rail crossings through the installation of four-quadrant gates (reducing potential vehicle intrusion) and median channelization where not present (also reducing potential vehicle intrusion). These improvements are described in Chapter 2. As described in Section 3.11, the project also includes SS-IAMF#2: Safety and Security Management Plan, and SS-IAMF#3: Hazards Analyses. With the proposed upgrades and the IAMFs, the Draft EIR/EIS concludes that the safety impact relative to at-grade crossing operations would be less than significant under CEQA and that the project would not have a substantial adverse effect under NEPA.

Studies (Cooper and Ragland 2012; FRA 2015) have shown that a large portion of accidents that occur at at-grade crossings are due to driver behavior or inattention. FRA estimates that 94 percent of train-vehicle collisions can be attributed to driver behavior or poor judgement (FRA 2015). A 2012 Caltrans study indicated that a key solution to rail crossing crashes is to remove the ability for the driver to engage in a potentially faulty decision-making process by making it more difficult for the driver to bypass lowered gates. Median separators and long-arm gates or four-quadrant gates have been shown to reduce the potential for collisions by removing or substantially deterring the ability of vehicles to bypass two-quadrant gates. The addition of a four-quadrant gate system was indicated in one study as providing a reduction of the likelihood of a collision by 82 percent compared to at-grade crossings with only two-quadrant gates (Cooper and Ragland 2012).

The discussion below describes the FRA regulatory requirements relative to at-grade crossings, existing conditions, changes with HSR service, safety improvements within the HSR portion of the project (including four-quadrant gates and median separators), and safety aspects of operations within the Caltrain corridor portion of the project.

Federal Railroad Administration Requirements

At-grade rail crossings are regulated at the federal level by the FRA. Federal requirements (per 49 C.F.R. § 213.307 and 213.347) are as follows (FRA 2015):

- For 110 mph or less, at-grade crossings are permitted. States and railroads cooperate to determine the needed warning devices, including passive crossbucks, flashing lights, two-quadrant gates (close only “entering” lanes of road), long gate arms, median barriers, and various combinations. Crossing lights and/or gates are activated by electrical circuits wired to the track (track circuits). FRA advocates the use of a site-specific approach so that every crossing is evaluated and treated appropriately.
- For 111–125 mph, FRA permits rail crossings only if an “impenetrable barrier” blocks roadway traffic when trains approach.
- Above 125 mph, no rail crossings are permitted.

The Rail Safety Improvement Act of 2008 reauthorized the FRA to oversee the nation’s rail safety program. One aim of the statute is to improve conditions of rail bridges and tunnels. The Rail Safety Improvement Act also requires railroads to implement PTC systems by the end of 2015 on certain rail lines.[11] PTC infrastructure consists of integrated command, control, communications, and information systems for controlling train movements that improve railroad safety by significantly reducing the probability of collisions between trains, casualties to roadway workers and damage to their equipment, and overspeed accidents (49 C.F.R. Parts 200–299). As of

[11] In late 2015, Congress extended the deadline by at least 3 years to December 31, 2018, with the possibility of an extension to a date no later than December 31, 2020, if a railroad completes certain statutory requirements that are necessary to obtain an extension (www.fra.dot.gov/ptc).

December 2020, PTC has been implemented by PCJPB and certified by the FRA as part of the Caltrain Modernization Program. This system provides the Caltrain corridor with enhanced safety features that will monitor and, when necessary, control train movement in the event of operational incidents.

California Public Utilities Commission Requirements

The California Public Utilities Commission (CPUC) also regulates at-grade crossing safety. Among other requirements, the CPUC requires the following per General Order No. 75-D in addition to signage, flashing lights, audible warnings and two-quadrant gates:

- A vehicle presence detection system shall be installed whenever exit gates are used. The system shall be designed such that if a vehicle is detected between the entrance and exit gates, the exit gate shall remain upright until the vehicle clears the exit gate.
- At an at-grade crossing with automatic warning devices where a diagnostic team determines that preemption is necessary, for example where vehicular traffic queues from traffic signal-controlled intersections exceed the Clear Storage Distance (as defined in the California Manual on Uniform Traffic Control Devices), the traffic signals shall be interconnected with the automatic warning devices.

Existing Conditions

The current maximum speed for rail operations between San Francisco and San Jose is 79 mph, although operational speeds are often lower where curves exist or where passenger trains are approaching or stopping at existing stations. On a daily basis between San Francisco and Santa Clara, there are approximately 98 trains (92 Caltrain and 6 freight trains). Between Santa Clara and San Jose, there are approximately 124 trains (92 Caltrain, 8 ACE, 15 Capitol Corridor, and 9 freight).

There are 41 public at-grade rail-roadway crossings between 4th and King Street Station in San Francisco and West Alma Avenue in San Jose. The existing public road crossings have primarily two-quadrant gates (e.g., where road traffic has a barrier in the direction of travel). The crossings with two-quadrant gates are activated on a timer with approaching train sets triggering the crossing barriers via a track circuit located on the track at a specified distance away based upon the maximum permissible line speed to ensure the barriers are lowered prior to the train reaching the crossing.

Federal requirements specify a 20-second minimum for right-of-way clearance time as set forth in the *Manual on Uniform Traffic Control Devices* (Federal Highway Administration 2012). Per Caltrain specifications, the existing crossing control systems are designed to provide 25–30 seconds of right-of-way clearance between the time the gates come down and warning lights turn on and the arrival of the train at the crossing. The total gate-down time at the crossing includes the time for the train to pass through the crossing and the gates to come up once the train has been detected to have passed the crossing. Total time is governed by the speed of the train, geometric configuration of the specific crossing, and other site-specific characteristics.

Median separators prevent drivers from going around lowered gates by using the opposite travel lane. Some of the at-grade crossings have median separators on both sides of the tracks (22 crossings), some have median separators on one side of the track (12 crossings), and some have no median separators (7 crossings).

Existing at-grade crossings between San Francisco and San Jose vary as to whether the railroad preemption is or is not interconnected with adjacent traffic signals. There are 22 at-grade crossings with either advanced or simultaneous signal preemption and 19 at-grade crossings where there are no immediately adjacent traffic signals. Where signalized intersections near at-grade crossings have traffic signal preemption connected to the crossing gate and warning light systems, some of the crossings have advanced signal preemption, which generally provides 5–15 seconds of green time to allow queues between the grade crossing and traffic signal to dissipate, while at other crossings signal preemption is at the same time as safety gate activation. During this period, the crossing gates are down, thus prohibiting vehicles from entering the crossing.

After the track clearance interval, signals either flash red for all movements (acting as an all-way stop-controlled intersection) or by selectively dwelling on a green phase for movements that do not contribute volume to the grade crossing (i.e., movements parallel to the rail line). After the train passes through the crossing, the signal resumes regular phasing and timing patterns.

HSR Train Service Changes

With the project, there would be an initial increase in total number of trains operating in the rail corridor, by up to 2 trains pphpd and up to 4 trains pphpd by 2040 (up to 134 daily trains) between 4th and King Street Station and San Jose Diridon Station. With the track modifications proposed in the rail corridor, the maximum speed that trains could operate would be increased up to 110 mph on straight portions of track, but would be lower in areas of curves such as in the approach to the San Jose Diridon Station.

HSR Project Addition of Four-Quadrant Gates and Median Separators

The HSR project would modify and improve all at-grade crossings within the corridor. Of the 41 existing at-grade crossings, there would be improvements at 38 to 40 at-grade crossings (depending on the alternative selected). These improvements would include the installation of four-quadrant gates at at-grade crossings covering all lanes of travel with new train detection and control equipment and median separators to channelize and regulate paths of travel. Four-quadrant gates would entail gate mechanisms on both sides of the tracks for both directions of automotive traffic. The exit gates blocking the road leading away from the tracks in this application would be equipped with a delay, beginning the descent to their horizontal position several seconds after the entrance gates to avoid trapping roadway vehicles on the crossing. Four-quadrant gates are safer than two-quadrant gates because they prevent drivers from illegally driving their vehicles around lowered gates to try to beat a train.

The new at-grade crossing control would be designed to minimize the total period of gate-down time at crossings, while satisfying mandatory requirements and providing for safe warning and clearance intervals.

The existing grade crossings with no barriers will need to be upgraded as the increase in line speed makes it mandatory for crossings to have barriers and warnings of approaching trains. The crossings with barriers must be modified as the existing positioning of the trackside equipment triggering the closure of the barriers will not account for the increased line speeds and longer train lengths of HSR trains.

As described above, the addition of a four-quadrant gate system was indicated in one study as providing a reduction of the likelihood of a collision by 82 percent compared to at-grade crossings with only two-quadrant gates (Cooper and Ragland 2012).

Other Safety Features within the Caltrain Corridor

The blended portions of the project alternatives would be within the Caltrain corridor and PCJPB would be the host railroad. As the host railroad, the PCJPB is responsible for operations within the Caltrain corridor and establishes the operational and safety requirements for all railroad operations using its tracks. The PCJPB is also responsible for compliance with FRA and CPUC requirements for crossing and signal system operations as the host railroad. At present, the Caltrain corridor uses wayside signal systems for at-grade crossing gate controls.

The Authority reached out to PCJPB in summer 2020 to identify the status of PTC and what safety investments are likely to be in place at the time that HSR enters the Caltrain corridor. PCJPB (Bouchard 2020) identified that it could not provide specific detail at that time for several reasons: (1) Caltrain intends to develop a future Capital Improvement Program to support near-term implementation of its recently adopted Caltrain Service Vision, but since the Capital Improvement Program is not yet developed, the future improvements are not known with precision; (2) given the COVID-19 pandemic and the drastic financial impact on Caltrain with its lack of a dedicated funding and necessary overreliance on farebox revenue, current funding capacity for Caltrain corridor improvements is unknown. Caltrain provided information regarding

the current configuration of the railroad as an attempt to envision what future improvements will be planned, funded, and implemented.

Caltrain has contracted with Wabtec Corporation to implement the Interoperable Electronic Train Management System (I-ETMS) PTC solution (this takes the place of previously planned Communications Based Overlay Signal System). I-ETMS is a signal system overlay-based solution and thus PCJPB has identified that the basic wayside systems for preemption that are in place now should be assumed to be in place in the future (Bouchard 2020). Wabtec describes I-ETMS generally as follows (Wabtec n.d.):[12]

- Integrates new technology with existing train control and operating systems to enhance train operation and safety.
- Prevents track authority violations, speed limit violations, unauthorized entry into work zones, and train movement through a switch left in the wrong position, all of which reduce the potential for train accidents.
- With I-ETMS, the crew remains in control of the train. The system monitors and ensures the crew's compliance with all operating instructions, while the I-ETMS display screen provides the train crew a wealth of operating information.
- As the train moves down the track, the I-ETMS on-board computer, with the aid of an on-board geographic database and global positioning system, continuously calculates warning and braking curves based on all relevant train and track information including speed, location, movement authority, speed restrictions, work zones, and consist restrictions.
- I-ETMS also communicates with wayside devices, checking for broken rails, proper switch alignment, and signal aspects.
- All information is combined and analyzed in real time to provide a "safety net" for improved train operation.

PCJPB also identified that Caltrain has aggressively pursued safety upgrades including signage, pavement markings, and medians at most vehicular and pedestrian crossings. Caltrain uses a hazard analysis tool that is updated periodically to determine whether a particular crossing will receive upgrades (Bouchard 2020).

Conclusion

The Authority will work with local authorities and Caltrain to install the safety improvements included as part of the HSR project. The Authority will coordinate with PCJPB concerning safety conditions for HSR operations within the Caltrain corridor.

The project would meet and/or exceed federal safety requirements for train operations relative to at-grade crossings because the project would upgrade existing at-grade crossings through installation of four-quadrant gates and median channelization, and signal systems. With these upgrades, the Draft EIR/EIS concludes that the safety impact relative to at-grade crossing operations would be less than significant under CEQA.

17.8.2 FJ-Response-SS-2: Emergency Vehicle Response Times

Commenters expressed concern about the potential delay in emergency vehicle response times due to the project, particularly in relation to increased gate-down time at at-grade crossings. Some commenters questioned the rationale for the 30-second delay significance threshold. Some commenters state that some of the mitigation is already in place, is being deferred, or will not be effective, and/or that the Authority should fund operations of a new fire station (not just construction). Some commenters also requested grade separations to be included as part of the project to address this concern.

[12] This is a generic description from the Wabtec website; the system features for the Caltrain corridor may vary from those described.

Draft EIR/EIS Analysis

Section 3.11 of the EIR/EIS analyzes the potential delay in emergency vehicle response time for all alternatives due to (1) increased station vehicle traffic and associated roadway congestion; and (2) increase in gate-down time at at-grade crossings. The Draft EIR/EIS identifies that impacts before mitigation would be significant under CEQA at certain locations in San Francisco, Millbrae, Brisbane, San Jose, Burlingame, Redwood City, Menlo Park, Palo Alto, and Mountain View. Mitigation identified includes SS-MM#3 and SS-MM#4. Specifics of this mitigation are discussed below. The Draft EIR/EIS concludes that the significant impacts can be reduced to a less-than-significant level with the identified mitigation.[13]

Significance Threshold

The rationale for the 30-second delay significance threshold for emergency vehicle response analysis is discussed in Draft EIR/EIS Section 3.11.4.5, Method for Determining Significance under CEQA (specifically, footnote 9 on page 3.11-16 of the Draft EIR/EIS). For the purposes of the analysis, inadequate emergency access was defined as either a substantial blockage of physical access for emergency response purposes or a substantial increase in emergency response times (defined as greater than 30 seconds). While there are local standards for emergency vehicle response time, there are no established state or federal emergency vehicle response time standards, and analysts were not able to identify specific thresholds previously used under CEQA to evaluate this effect.[14] The 30-second criterion was selected on the basis of several considerations: (1) analysts reviewed local emergency management agency standards for response times (as discussed in Section 3.11 of the Draft EIR/EIS), of which the shortest times were around 5 minutes. Thirty seconds—or 10 percent of 5 minutes (300 seconds)—was considered to represent a substantial delay in emergency response time; (2) NEPA effects of traffic delay are identified in Section 3.2 of the Draft EIR/EIS for signalized intersections with congested conditions (defined as LOS E or F) where the project would result in 4 seconds of additional delay. Because an emergency vehicle route across the railroad is likely to encounter anywhere from two to six intersections affected by gate-down time, a 30-second delay would include the collective effects of up to seven intersections (7 intersections times 4 seconds = 28 seconds).

Proposed Mitigation

The Draft EIR/EIS includes two mitigation measures to address emergency vehicle response time delays. SS-MM#3 includes the installation of priority treatments for emergency vehicles at certain locations near HSR stations in San Francisco, Millbrae, and San Jose. For the three station areas, the Authority contractor will develop an emergency vehicle priority plan and install emergency vehicle priority treatments with city approval. With emergency vehicle priority treatments, delay impacts related to congestion around the stations are expected to be reduced to less than 30 seconds, and therefore, determined to be a less-than-significant impact under CEQA.

Per SS-MM#4, for the locations where the EIR/EIS identified that there may be significant delays to emergency vehicle response times, the Authority will conduct a baseline monitoring study to determine baseline conditions for travel times without HSR operations at eight at-grade crossing locations in Burlingame, Redwood City, Menlo Park, and Mountain View. Thereafter, the Authority will conduct monitoring approximately 6 months after initial HSR operations and annually thereafter for 3 years.[15] Since full operations may not occur for years, the Final EIR/EIS has been

[13] The Draft EIR/EIS also notes that there may be significant unavoidable impacts if affected local jurisdictions choose not to construct and operate the improvements included in the mitigation (the mitigation obligates the Authority to fund the construction of improvements, but operational costs would need to be funded by local jurisdictions).

[14] Analysts reviewed prior EIR/EISs and contacted experienced transportation analysts among the project team and could not identify any other specific quantitative thresholds used to evaluate this impact.

[15] As discussed in the Draft EIR/EIS, initial HSR operations would be more limited in scope than full operations expected by 2040. Chapter 2 of the Draft EIR/EIS identifies that initial operations would include a maximum of two trains pphpd (up

clarified to require this regime of monitoring after increases in HSR operations up to the full operation levels noted for 2040 in the EIR/EIS. An emergency vehicle priority treatment plan would be developed to address emergency vehicle response times at at-grade crossing locations where an increase in emergency response times of 30 seconds or more above baseline travel time would occur due to HSR service. This would be indicated by monitoring of initial service, or predicted for future HSR service increases based on evaluations of the likely future effects based on the monitoring of initial service and the planned future HSR service levels. The performance standard for the plan is to reduce HSR train operation effects on emergency vehicle response time to less than 30 seconds.

SS-MM#4 is an adaptive mitigation measure designed for application both because the HSR program will be phased (initially with two HSR trains in each direction per hour, added to a base of six Caltrain trains in each direction per hour) and because it is hard to predict what conditions will be in place almost 10 years in the future when the initial HSR service is implemented. Monitoring will occur 1 year prior to initiation of new service, 6 months after initiation, and annually thereafter for 3 years. An emergency vehicle priority treatment plan would be developed where an increase in emergency response times of 30 seconds or more occurs along cross-streets of designated at-grade crossing locations. The emergency vehicle priority treatment plan may include one or more of the seven emergency vehicle priority treatment strategies listed below. Improvements would be made upon mutual agreement of the plan by the Authority and the affected local agency.

Various commenters expressed concerns about the effectiveness of SS-MM#4. While SS-MM#4 does not reduce the delay at the at-grade crossings, the different aspects of the mitigation will reduce the delay in emergency vehicle response time, which is the identified concern. The following describes the ways in which the different strategies would be effective in reducing delays in emergency vehicle response time:

- **Emergency vehicle preemption equipment at traffic signals**—Emergency vehicle priority at nearby traffic signals will help emergency response times after the train has passed.
- **Route-based traffic signal priority control systems**—Emergency vehicle priority at traffic signals along the response route away from the at-grade crossing will help emergency response times for the rest of the route.
- **Emergency vehicle and transit queue bypass lanes**—Emergency vehicle queue bypass lanes along the response route away from the at-grade crossing will help emergency response times for the rest of the route.
- **Roadway capacity and operational improvements to facilities paralleling the rail line to improve access to adjacent grade-separated rail crossings**—Improvements to routes to grade-separated rail crossings will reduce the response times along alternative routes to the at-grade crossing, which will help reduce response times.
- **Construction of new fire stations to reduce fire station response times in affected areas**—The mitigation measure does not propose relocation of existing stations. Instead it proposes the construction of new fire stations. If new fire stations are built, there would not be a reduction in service to other service areas. If necessary, as part of this mitigation, the Authority would fund the construction of new fire stations and the initial equipment associated with the new fire stations, and local jurisdictions would not incur these costs. However, the Authority cannot fund ongoing O&M of fire stations due to the prohibitions in Prop 1A regarding ongoing subsidies. While the Authority can provide funding for the construction of

to four one-way trains per hour or every 15 minutes on average) compared to up to four trains pphpd (up to eight one-way trains per hour or every 7.5 minutes on average) at full service. The intent of monitoring initial operations to identify the potential need for emergency vehicle response time improvements is to identify needs early enough to be in place prior to full operations.

emergency vehicle response improvements, it cannot compel local jurisdictions to construct and operate the improvements.

- **Expansion of existing fire stations to reduce fire station response times in affected areas**—The intent of this provision is that the "expansion" would include additional emergency response equipment that could expand the ability of the station to respond to multiple calls at the same time, which could reduce the delay of individual calls where existing equipment is constraining. This provision may only provide benefits in certain circumstances. Section 3.11 of the Final EIR/EIS has been clarified to describe the intent of this provision.
- **Increase in contracted first responder ambulance services to reduce first responder ambulance response times in affected areas**—Contracted ambulance services often patrol or temporarily stage themselves on streets in response areas as opposed to only at fixed bases of operations. An increase in ambulance services will allow for patrol or temporary staging on multiple sides of the railroad alignment, which could help to reduce emergency response times and increase the ability to respond to multiple calls.

With the exception of the potential inability of local jurisdictions to fund ongoing fire station operations, the mitigation measures discussed in this section are considered feasible and will reduce emergency response times for the reasons described in this section.

Grade Separations as Mitigation

Comments state that the Authority should implement grade separations at at-grade crossings to address emergency vehicle response impacts.

As an alternative to the specific mitigation strategies noted above and described in full in SS-MM#4, the Authority and a local agency may reach a mutual agreement to have the Authority make an in-lieu payment toward other infrastructure projects including nearby grade-separation projects. The in-lieu payment would be the capital contribution that the Authority would have otherwise made to one or more of the above emergency vehicle priority treatment strategies. Please also refer to Section 17.4.1, FJ-Response-GS-1: Requests for Grade Separations, for further discussion.

17.8.3 FJ-Response-SS-3: Brisbane Fire Station and Emergency Access

Commenters expressed concern about the feasibility of new fire station design concepts, including concerns over providing one driveway or requiring fire trucks to back into the station, timing for construction of the proposed new fire station, access effects during construction, access effects during operations, the effect of the project on emergency vehicle response times, consideration of fire station alternatives, and the level of detail for analysis of the impact of the West Brisbane LMF included in Alternative B.

As illustrated on Figure 17-1, the existing Brisbane Fire Station (3445 Bayshore Boulevard) has a primary driveway with exclusive access to and from the east leg of the signalized Bayshore Boulevard/Valley Drive intersection. From this location, fire trucks can proceed north or south on Bayshore Boulevard or west on Valley Drive. The existing Brisbane Fire Station also has a secondary driveway in a mid-block location with right-in, right-out access to northbound Bayshore Boulevard. To access Tunnel Avenue, fire trucks turn south on Bayshore Boulevard, then travel approximately 1,000 feet, then turn left on Tunnel Avenue.

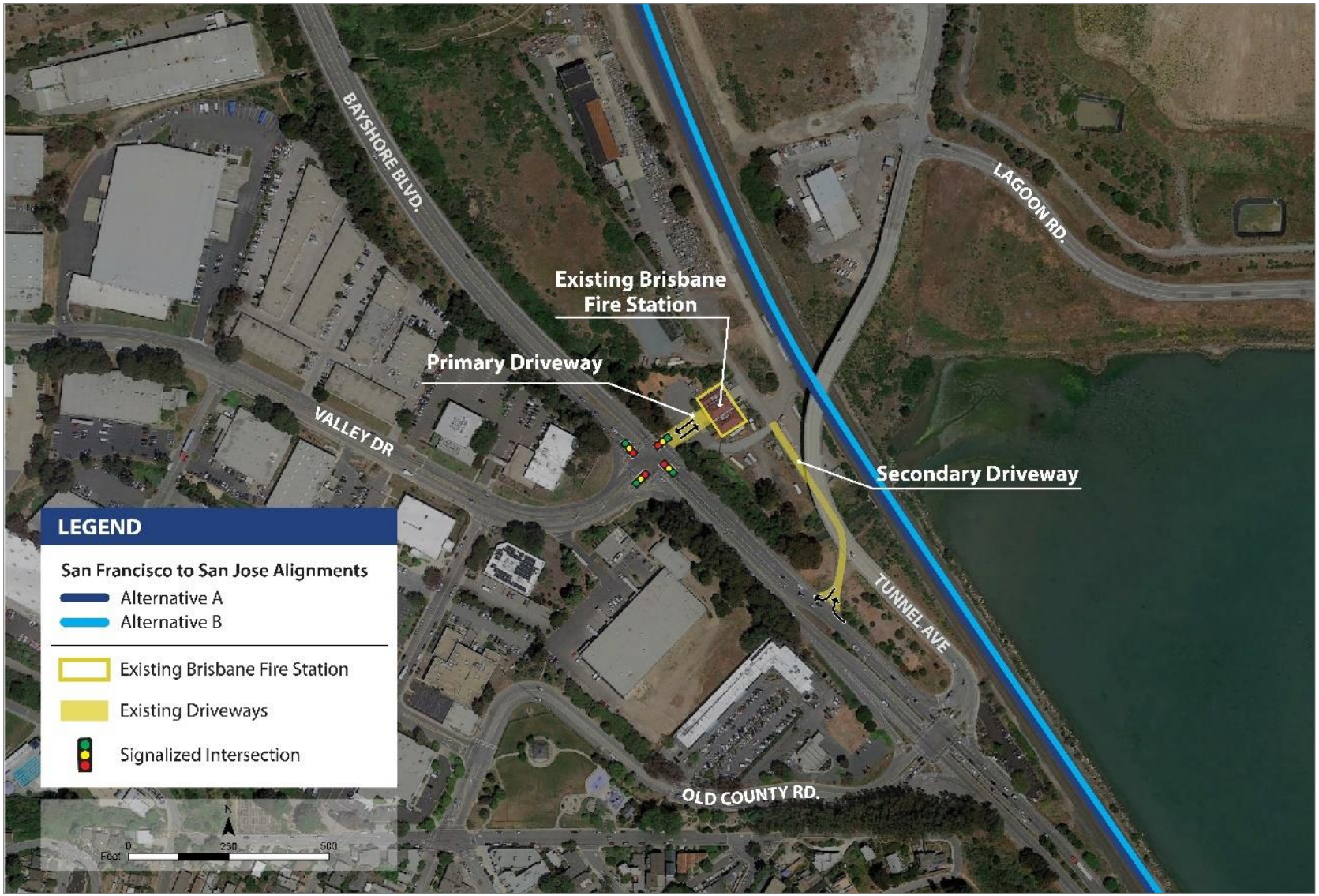


Figure 17-1 Existing Brisbane Fire Station

Construction of either the East Brisbane LMF under Alternative A or the West Brisbane LMF under Alternative B would require relocation of the Tunnel Avenue overpass (over the existing Caltrain corridor) as well as the realignment of Lagoon Road.

Relocation of the Tunnel Avenue overpass would include relocating the southern terminus of Tunnel Avenue from the intersection of Bayshore Boulevard/Old County Road to Bayshore Boulevard/Valley Drive, which is the primary vehicle access to and from the existing Brisbane Fire Station.

As described in the Draft EIR/EIS (published July 2020), these roadway modifications had been anticipated to require temporary road closures of 1 to 3 months. These proposed temporary closures elicited extensive comments and concerns from the City of Brisbane, particularly with regard to operations of the Brisbane Fire Station.

After publication of the Draft EIR/EIS, the Authority met with the City of Brisbane (on November 10, 2020, and December 28, 2020) to discuss the City's comments and concerns over relocation of the fire station and temporary access during construction. Several options were discussed (see summary below).

As a result of these meetings, the Final EIR/EIS has been revised to include a feasible approach to phase construction of both the relocated Tunnel Avenue overpass and the Lagoon Road extension. This phasing would maintain access to Tunnel Avenue from Bayshore Boulevard throughout the construction process without need for the temporary road closures described in the Draft EIR/EIS. The Authority also refined plans for the Relocated Brisbane Fire Station (Alternative A) and further clarified access modifications for the Relocated Brisbane Fire Station (Alternative B).

Clarifications to Section 3.11 and other relevant sections in Chapter 3 of the Final EIR/EIS have been made per the changes and additional information provided below.

Alternative A Roadway Modifications and Relocated Fire Station

For Alternative A, the sequence of relocating the Tunnel Avenue overpass and realigning Tunnel Avenue and Lagoon Road is illustrated on Figures 17-2 through 17-4.

For Alternative B, such sequencing is illustrated on Figures 17-5 through 17-7 and explained in the following subsection.

The following summarizes the sequence of access to Tunnel Avenue and Lagoon Road during construction under Alternative A:

- During Stage 1, access would be maintained as-is during construction of the relocated Tunnel Avenue overpass structure and approach embankments and the construction of the realigned Lagoon Road (Figure 17-2).
- During Stage 2, construction of the relocated Tunnel Avenue overpass and the Tunnel Avenue/Bayshore Boulevard intersection would be completed, and traffic would be routed to the relocated Tunnel Avenue overpass. At this point, construction of the Relocated Brisbane Fire Station (Alternative A) could commence, and the existing Tunnel Avenue overpass could be removed, except for the two structure bents that are over the secondary access roadway. The secondary access would continue to be used until the Relocated Brisbane Fire Station (Alternative A) is operational, at which point the existing Brisbane Fire Station and remaining portions of the existing Tunnel Avenue overpass would be removed (Figure 17-3).
- Once construction of the Lagoon Road realignment is complete, traffic would be routed to the realigned Lagoon Road (Figure 17-4).

The following summarizes the sequence of access during construction for the existing Brisbane Fire Station and then Relocated Brisbane Fire Station (Alternative A):

- During the first stage of construction, a relocated Tunnel Avenue would be built north of the existing Brisbane Fire Station with a new temporary signalized intersection at Bayshore

Boulevard several hundred feet north of the existing Brisbane Fire Station access at the Bayshore Boulevard/Valley Drive intersection. During this initial stage of construction, the existing Brisbane Fire Station would remain in its current location and access to the street network from the station would be unchanged (Stage 1, Figure 17-2).

- During construction of the relocated Tunnel Avenue intersection with Bayshore Boulevard, access to the existing Brisbane Fire Station would be maintained via the existing secondary access from the rear of the station. Temporary circulation from the front of the existing Brisbane Fire Station to the secondary access would also be maintained by means of improvements to the existing driveway on the south side of the station (Stages 1 and 2, Figures 17-2 and 17-3).
- Once the relocated Tunnel Avenue overpass is complete with the interim connection to Bayshore Boulevard, fire station vehicles would access Tunnel Avenue via the new temporary signalized intersection several hundred feet north of the existing Brisbane Fire Station access at Bayshore Boulevard/Valley Drive. The Relocated Brisbane Fire Station (Alternative A) would then be constructed (Stages 2 and 3, Figures 17-3 and 17-4).
- During the final stage of construction, demolition of the existing Brisbane Fire Station would occur, followed by construction of the ultimate connection of the relocated Tunnel Avenue overpass to the east leg of the Bayshore Boulevard/Valley Drive intersection. During this last stage of construction, the Relocated Brisbane Fire Station (Alternative A) would be operational and access to the local street network would be similar to the access for the existing Brisbane Fire Station, as it would occur at a signalized intersection on Bayshore Boulevard approximately 800 feet south of the existing Brisbane Fire Station access, with exclusive use of the east leg of the intersection (Stage 3, Figure 17-4).

Based on the above construction staging, emergency vehicle access to the local street network from the Brisbane Fire Station would be uninterrupted during construction.

As illustrated on Figure 17-4, under Alternative A, the Brisbane Fire Station would be relocated approximately 800 feet to the south of the existing fire station, with two driveways connecting to Bayshore Boulevard. This reflects a revision from the Draft EIR/EIS, which indicated a location approximately 600 feet to the south of the existing fire station.

The Revised Brisbane Fire Station (Alternative A) would have the same access points as the proposed Brisbane Fire Station in the Draft EIR/EIS, with primary access (either ingress or egress) from the Bayshore Boulevard/Old County Road intersection, and secondary access to the rear of the fire station from the existing right-in, right-out only midblock intersection. The shift further south in the Revised Brisbane Fire Station shortens the length of the primary access driveway to the south, which would minimize travel time from the station to Bayshore Boulevard. Three apparatus bays (two drive-through and one reverse in) parallel to Bayshore Boulevard would be provided. Additionally, parking for the Revised Brisbane Fire Station would be provided in the southeast corner of Bayshore Boulevard and Old County Road. There is an additional 11,000 square feet of outdoor space available at the proposed location for use by the Revised Brisbane Fire Station. In addition, the new Tunnel Avenue/Bayshore Avenue intersection has been shifted further north to minimize impacts to the existing fire station operations during construction.

After construction, access would be like access at the existing fire station during operations, but would have some changes, as discussed below:

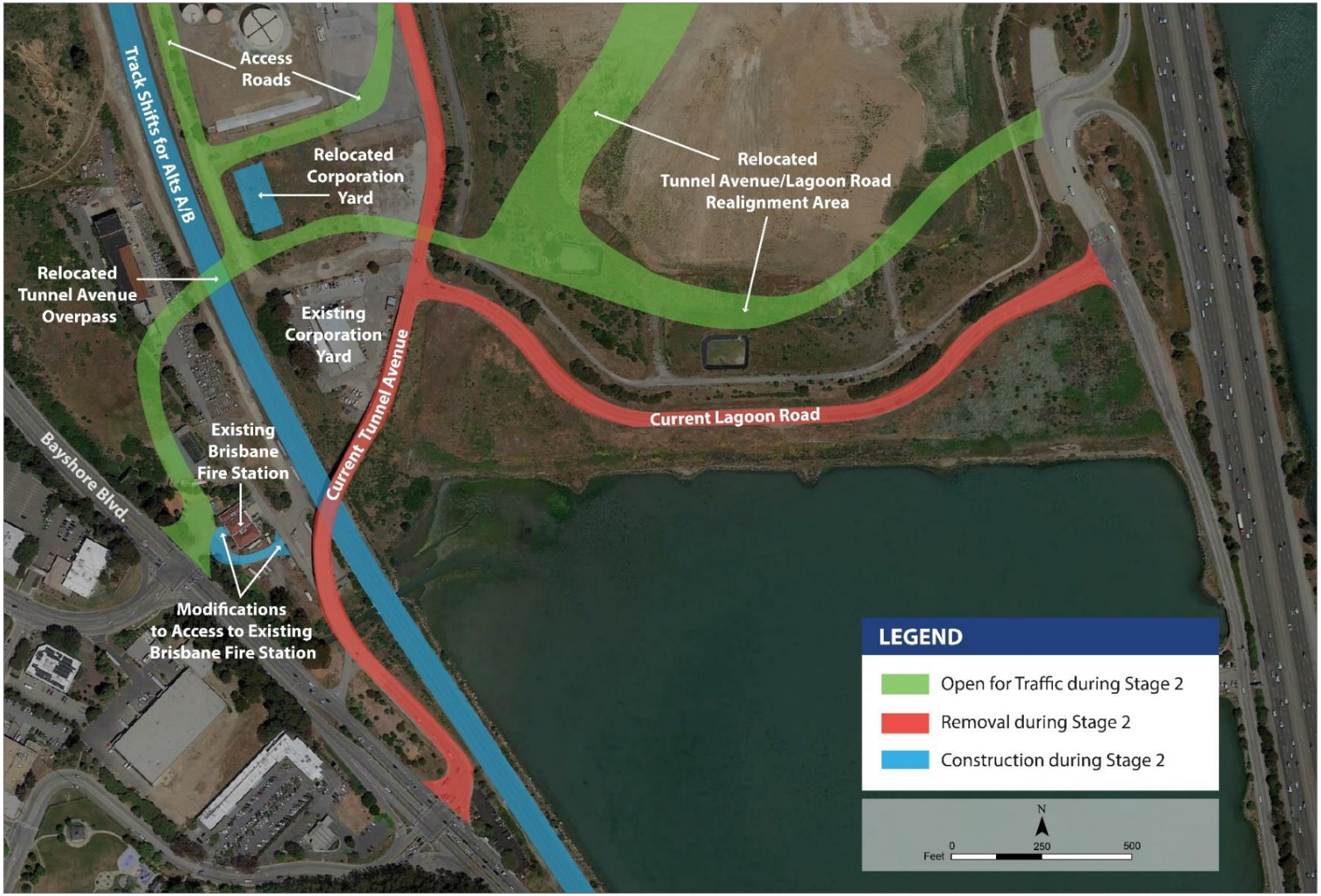
- Once the last stage of construction is complete, vehicles from the fire station would access the relocated Tunnel Avenue via the east leg of the Bayshore Boulevard/Valley Drive/Tunnel Avenue intersection. The distance traveled by fire station vehicles along Bayshore Boulevard from the new fire station to access the relocated Tunnel Avenue overpass would be the same as currently exists from the current fire station to the existing Tunnel Avenue overpass.
- The travel distance to Bayshore Boulevard would be 10 feet shorter than in the existing condition, however a 90-degree turn is required to approach the intersection. Returning fire

trucks would either use the secondary access to the north of the station and pull through into the station bays or use the primary access and back into the station bays using the parking area to maneuver. Backing into the station is not required, but if done, could occur from within the fire station property (the parking lot) and not from a public street.

- The minimum width of the emergency services right-of-way would be approximately 110 feet. The new station would be functional within the footprint provided.
- The relocation of the Brisbane Fire Station and connection to Bayshore Boulevard by two driveways would provide full access to Bayshore Boulevard that is equivalent to the existing level of access.

AUGUST 2021

Figure 17-2 Conceptual Construction Stage 1 for Tunnel Road/Lagoon Road Realignment, Alternative A



AUGUST 2021

Figure 17-3 Conceptual Construction Stage 2 for Tunnel Road/Lagoon Road Realignment, Alternative A

AUGUST 2021

Figure 17-4 Conceptual Construction Stage 3 for Tunnel Road/Lagoon Road Realignment, Alternative A

Alternative B Roadway Modifications and Relocated Fire Station

Under Alternative B, the Brisbane Fire Station would be relocated approximately 150 feet to the south of the current fire station, with a driveway for the relocated fire station connecting to Bayshore Boulevard via the existing station's secondary driveway. As noted above, this secondary driveway is a mid-block location that provides right-in, right-out access to northbound Bayshore Boulevard. Fire trucks exiting the relocated fire station would only be able to turn northbound onto Bayshore Boulevard. The relocated Brisbane Fire Station would also have access via the new Tunnel Avenue/Bayshore Boulevard intersection.

For Alternative B, emergency vehicle access to the local street network from the Relocated Brisbane Fire Station (Alternative B) would initially be maintained at the existing signalized intersection of Bayshore Boulevard/Valley Drive (Figure 17-5). Ultimately, as illustrated on Figure 17-7, such access would be shifted to a primary access via a new driveway on the relocated Tunnel Avenue, on the east leg of the signalized intersection of Bayshore Boulevard/Valley Drive/Relocated Tunnel Avenue, as well as a secondary access at the existing mid-block driveway on Bayshore Boulevard between Valley Drive and Old County Road (right-in, right-out access).

The Relocated Brisbane Fire Station (Alternative B) would be constructed immediately south of the existing Brisbane Fire Station. Construction staging for the area around the fire station would be similar under Alternative B to the staging described for Alternative A. However, construction of the Relocated Brisbane Fire Station (Alternative B) is not dependent on switching traffic to the relocated Tunnel Avenue overpass, and could commence in advance, including provision of the new secondary access from Bayshore Avenue. Full operation of the existing Brisbane Fire Station would be maintained as is during construction of the relocated Tunnel Avenue overpass structure and approach embankment. Once construction of the Relocated Brisbane Fire Station (Alternative B) is complete, access would be provided from the new secondary access and the existing Brisbane Fire Station would be removed, allowing construction of the relocated Tunnel Avenue intersection with Bayshore Boulevard and the primary access for the Relocated Brisbane Fire Station (Alternative B) onto Tunnel Avenue. At this point, traffic would be routed to the relocated Tunnel Avenue overpass, the Relocated Brisbane Fire Station (Alternative B) would be fully operational, and the existing Tunnel Avenue overpass could be removed.

The following summarizes the sequence of access during construction for the existing Brisbane Fire Station and then Relocated Brisbane Fire Station (Alternative B):

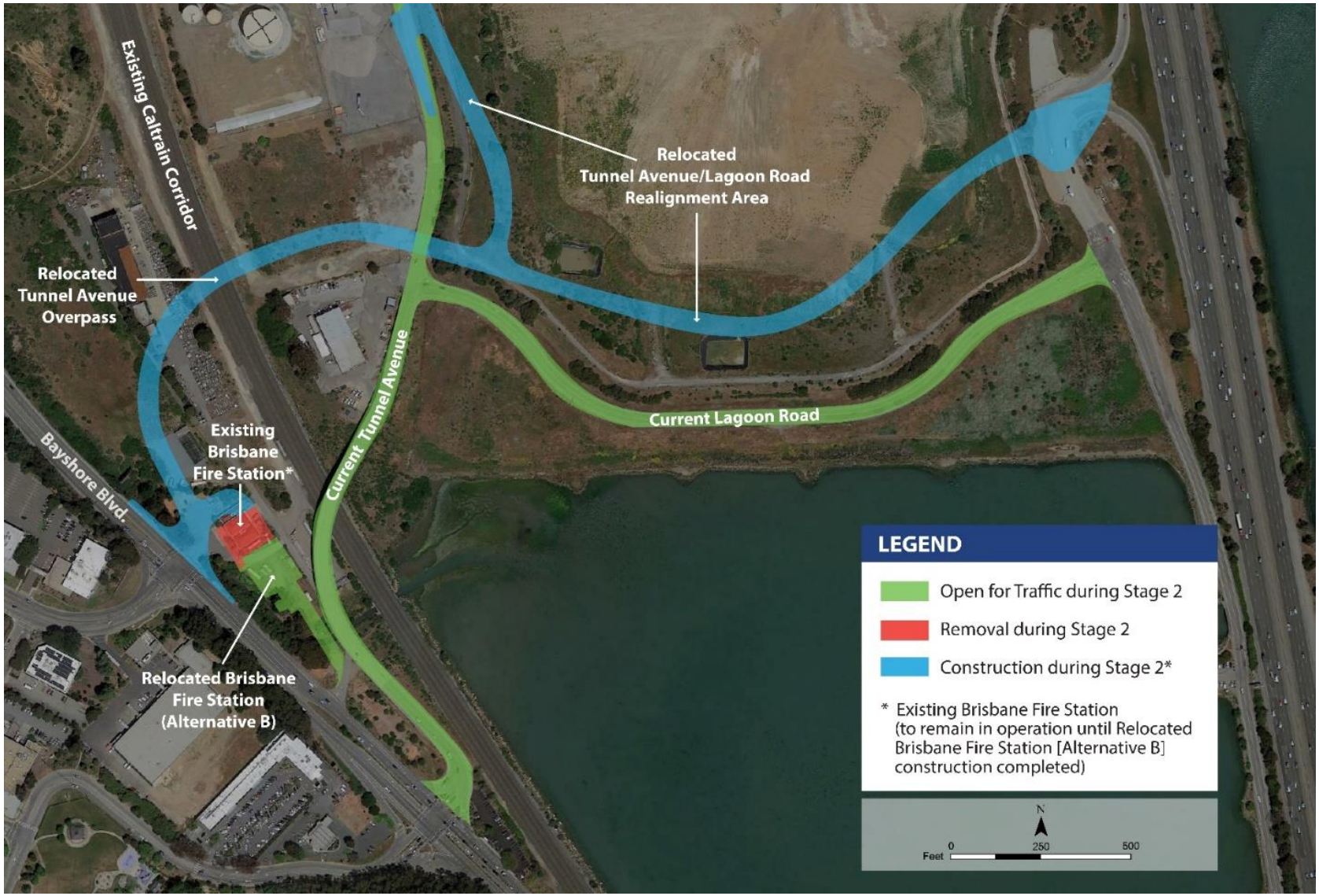
- During Stage 1, when the Tunnel Avenue overpass would be relocated to the north of the existing Brisbane Fire Station with a new temporary signalized intersection at Bayshore Boulevard several hundred feet north of the existing station access at Bayshore Boulevard/Valley Drive, the existing Brisbane Fire Station would remain and access to the street network would be unchanged (Figure 17-5).
- In Stage 2, construction of the Relocated Brisbane Fire Station (Alternative B) immediately south of the existing station would proceed. The existing Brisbane Fire Station and access would be retained during construction of the Relocated Brisbane Fire Station (Alternative B) (Figure 17-6).
- During Stage 2, demolition of the existing Brisbane Fire Station would occur followed by construction of the ultimate connection of the relocated Tunnel Avenue overpass alignment to the east leg of the Bayshore Boulevard/Valley Drive intersection. In Stage 3, the Relocated Brisbane Fire Station (Alternative B) would be operational and the primary access to Tunnel Avenue would occur via a temporary connection to the east leg of the signalized intersection of Bayshore Boulevard/Valley Drive intersection (Figures 17-6 and 17-7).
- During construction of the ultimate connection of the relocated Tunnel Avenue overpass alignment to the east leg of the Bayshore Boulevard/Valley Drive intersection and a new fire station driveway, access to the Relocated Brisbane Fire Station (Alternative B) via the primary access to Bayshore Boulevard may be closed for a short period of time while the final

segment of the relocated Tunnel Avenue is constructed. During any temporary access closures, access to the Relocated Brisbane Fire Station (Alternative B) would occur via the secondary access at the existing mid-block driveway on Bayshore Boulevard between Valley Drive and Old County Road (right-in, right-out access).

- After the last stage of construction is complete, vehicles from the Relocated Brisbane Fire Station (Alternative B) would access the relocated Tunnel Avenue via the primary access driveway onto the relocated Tunnel Avenue. The right turn from the Relocated Brisbane Fire Station (Alternative B) driveway onto northbound Tunnel Avenue would provide more direct access along Tunnel Avenue to the north than the existing Brisbane Fire Station access, where fire station vehicles must turn left onto Bayshore Boulevard, travel about 800 feet and turn left onto the existing Tunnel Avenue overcrossing. Access of fire station vehicles to Bayshore Boulevard with the Relocated Brisbane Fire Station (Alternative B) would be less direct than with the existing Brisbane Fire Station.

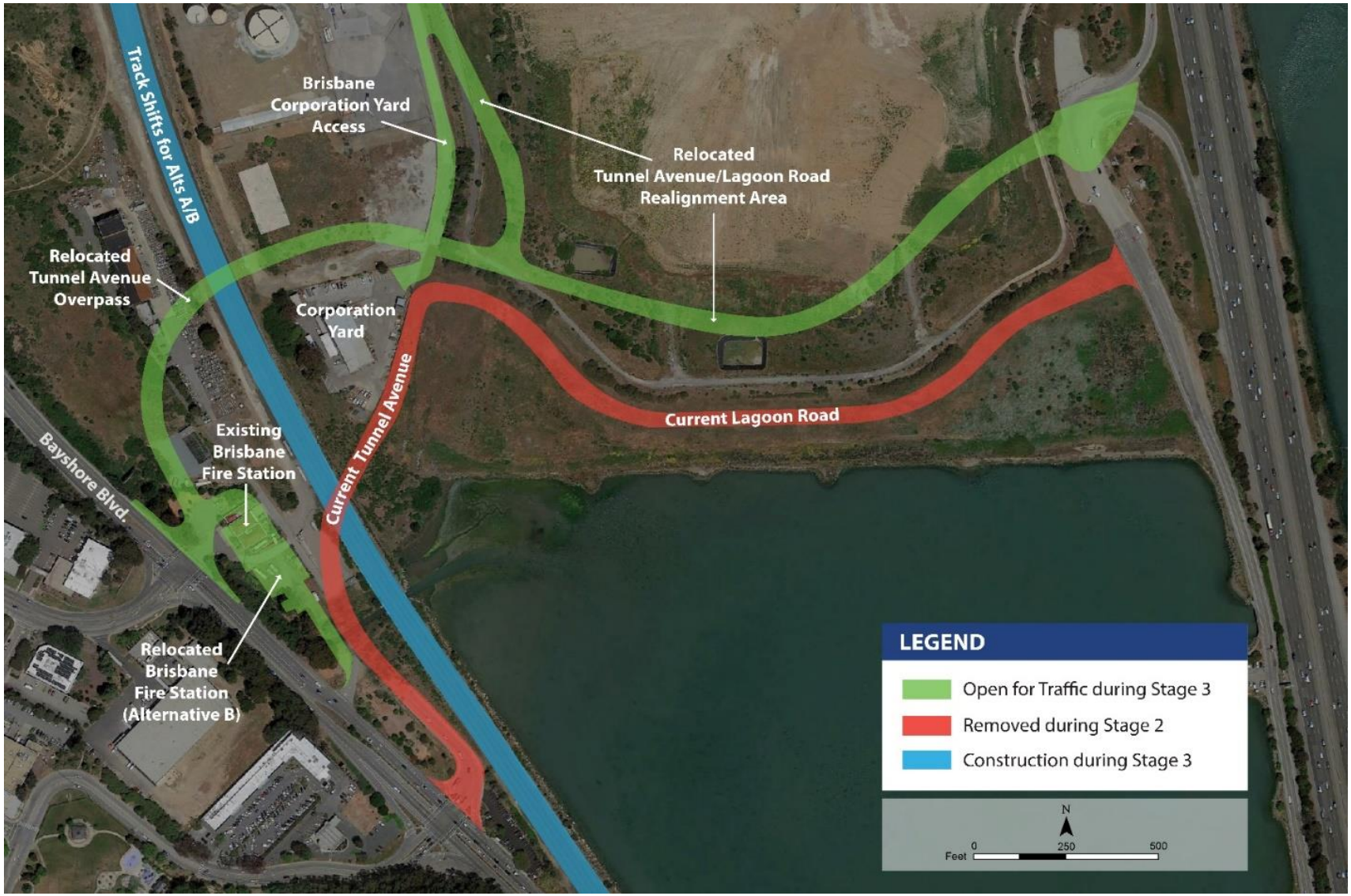
AUGUST 2021

Figure 17-5 Conceptual Construction Stage 1 for Tunnel Road/Lagoon Road Realignment, Alternative B



AUGUST 2021

Figure 17-6 Conceptual Construction Stage 2 for Tunnel Road/Lagoon Road Realignment, Alternative B



AUGUST 2021

Figure 17-7 Conceptual Construction Stage 3 for Tunnel Road/Lagoon Road Realignment, Alternative B

Emergency Response Impacts

The impact on emergency response under Alternative A would be less than significant under CEQA because the Relocated Brisbane Fire Station (Alternative A) and connection to Bayshore Boulevard by two driveways would provide full access to Bayshore Boulevard that is equivalent to the existing level of access provided, and thus the relocation would not add delays to fire trucks entering or exiting the station and would not affect service ratios, response times, or other performance objectives. Therefore, under Alternative A, CEQA does not require any mitigation.

The emergency response impact of the Relocated Brisbane Fire Station (Alternative B) would be significant under CEQA before mitigation because the permanent relocation and realignment of the Tunnel Avenue overpass would remove the existing Brisbane Fire Station's direct and exclusive access to the signalized Bayshore Boulevard/Valley Drive intersection and would replace it with an unsignalized driveway access and the non-exclusive use of the new Tunnel Avenue/Bayshore Boulevard signalized intersection. Due to the loss of exclusive access to a signalized intersection with Bayshore Boulevard, this would result in additional delay for exiting fire trucks and delays in emergency access and response times for trucks exiting the Relocated Brisbane Fire Station (Alternative B). The Authority has proposed mitigation (SS-MM#2) that will reduce impacts on emergency response times under Alternative B by providing a new mid-block signalized intersection on Bayshore Boulevard to maintain emergency vehicle access through project construction and operations.

Consideration of Alternatives for Relocation of the Brisbane Fire Station

Throughout the environmental review process, the Authority has considered multiple alternatives for relocation of the Brisbane Fire Station, which constitute a reasonable range of alternatives:

- **Relocated Fire Station (Alternative A) Studied in Draft EIR/EIS**—See description under Impact S&S#3 in Section 3.11 of the Draft EIR/EIS.
- **(Revised) Relocated Brisbane Fire Station (Alternative A)**—See description above. This revised option is now proposed for Alternative A and included in the Final EIR/EIS because it provides improved access.
- **Relocated Brisbane Fire Station (Alternative B)**—See description above; no change from the Draft EIR/EIS.
- **Relocated Fire Station for Alternative A with mid-block crossing**—This option would include relocation to the west side of Bayshore Boulevard adjacent to the existing midblock right-in, right-out intersection that currently provides access to the rear of the existing fire station. The intersection would be modified to an emergency-only signalized intersection for egress allowing access across the Bayshore Boulevard median. Ingress would be either as right-in, right-out from this intersection, or from the Old County Road/Bayshore Boulevard intersection to the rear of the fire station. Because the revised Alternative A fire station design in the Final EIR/EIS would provide adequate access at two locations to Bayshore Boulevard, including at the Old County Road intersection, it was not considered necessary to add the mid-block crossing to Alternative A and this option was not considered further in the EIR/EIS.
- **West Side Bayshore Option 1**—This option would include relocation to the west side of Bayshore at the 25 Park Place parcel at the southeast corner of Valley Drive and Park Place. This option could apply to either Alternative A or Alternative B. This option would have access to Park Place or Valley Drive and would require displacement of an existing commercial building. Access to Bayshore Boulevard would not be direct. Because this option would require displacement of an existing commercial building and access to Bayshore Boulevard would not be direct, this option was not considered further in the EIR/EIS.
- **West Side Bayshore Option 2**—This option would include relocation to the west side of Bayshore Boulevard at the parcel between the Pitney Bowes facility (at 125 Valley Drive) and the strip mall along Old County Road containing a laundromat, church, and several restaurants. This option could apply to either Alternative A or Alternative B. This option would

include access via a direct connection to Bayshore Boulevard and to Old County Road. Access to southbound Bayshore Boulevard could be direct. Direct access to northbound Bayshore Boulevard would require a mid-block crossing. Since this location would not provide direct access to an existing signalized intersection on Bayshore Boulevard (which would provide better access and egress as is done in the fire stations included in Alternatives A and B), it was not considered further in the EIR/EIS.

The Authority will continue to work with the City of Brisbane concerning the design for the Relocated Brisbane Fire Station.

Adequacy of Analysis of Impacts due to West Brisbane LMF included in Alternative B

One comment asserted that the analysis of impacts on the fire station with the West Brisbane LMF under Alternative B is at a lesser level of detail than the East Brisbane LMF under Alternative A. This is incorrect. Both alternatives were analyzed at an equal level of detail throughout the EIR/EIS, including in the analysis in Section 3.11.

17.9 Cultural Resources

17.9.1 FJ-Response-CUL-1: Baseline for Identification of Historic Properties

Several commenters noted concern for details regarding treatment of properties that may turn 50 years of age between 2017 and completion of the project.

The project's environmental baseline for purposes of the EIR/EIS analysis across all resource types is 2016–2017, which reflects the existing conditions as of the NOI and NOP publication dates. In accordance with the Authority's Section 106 Programmatic Agreement (PA), subsequent memoranda of agreement (MOA) would include a provision for the development and implementation of a post-review identification and evaluation effort as applicable to the undertaking. Please refer to Final EIR/EIS Appendix 3.16-D, Programmatic Agreement Among the FRA, the ACHP, the SHPO, and the Authority Regarding Compliance with Section 106 of the NHPA, As It Pertains to the California High-Speed Rail Project. The project's built environment treatment plan also addresses the identification and treatment of historic properties that may turn 50 between 2017 and the completion of the project. The Authority has assessed all potential historic properties identified in comments received on the Draft EIR/EIS; the consideration of these resources is addressed in individual responses to comments.

17.9.2 FJ-Response-CUL-2: Changes to the Archaeological Survey Report

Several commenters implied that revisions to the Archaeological Survey Report (ASR) (Authority 2019b) as supporting technical analysis for the EIR/EIS were required by suggesting the Authority's record search did not accurately identify known archaeological sites in the area of potential effects (APE), characterization of archaeological sensitivity was not consistent with the City and County of San Francisco archaeological sensitivity model for submerged and deeply buried resources, and undocumented historic-period archaeological resources were not fully considered.

The Authority consulted with the California State Historic Preservation Officer (SHPO) on the technical findings in the ASR, including several workshop meetings to preview eligibility determinations. The Authority also consulted on Section 106 findings of effects on archaeological resources. Please refer to the consulting parties record in Final EIR/EIS Volume 2, Appendix 3.16-A, Correspondence. The SHPO concurred with the identification of archaeological historic properties as represented in the ASR on August 27, 2019, as well as the findings of effects on those historic properties, on May 18, 2020. The ASR was circulated to Section 106 consulting parties for review and those comments were considered for revisions made prior to submittal to SHPO. Please refer to the agency and interested parties outreach record in Appendix 3.16-A and ASR Appendix C, Record Search Results. Identification of known archaeological resources, including presence, location, and extent, reflected in the ASR represents the most accurate data available from a record search conducted in May 2016. The City and County of San Francisco did not complete its geoarchaeological sensitivity analysis until July 2019, so that model was not

available for the ASR analysis. The Authority has considered the City and County of San Francisco's geoarchaeological sensitivity analysis and determined that it does not change the analysis and conclusions in the Draft EIR/EIS. The best available data was used to assess sensitivity for submerged and deeply buried archaeological sites based on the environmental baseline period of 2016–2017. Focused historical research was conducted to inform the sensitivity of the APE for historic-period subsurface archaeological resources and documented in the ASR. Based on the detailed technical analysis presented in the ASR, as well as the input provided by California's SHPO, there is substantial evidence to support the findings presented in the EIR/EIS. Consistent with the Section 106 PA, the Authority will prepare an MOA and archaeological treatment plan (ATP) that includes provisions for phased identification of archaeological resources as additional parcel access is obtained and design work is completed. Detailed protocols associated with unanticipated discovery of archaeological resources are addressed by the ATP. The ATP includes methods for subsurface archaeological testing in areas defined as having a high degree of archaeological sensitivity (including areas in the vicinity of known archaeological sites) and where archaeological resources have been previously documented. CUL-IAMF#1: Geospatial Data Layer and Archaeological Sensitivity Map, CUL-IAMF#2: WEAP Training Session, CUL-IAMF#3: Pre-Construction Cultural Resource Surveys, CUL-IAMF#4: Relocation of Project Features when Possible, CUL-IAMF#5: Archaeological Monitoring Plan and Implementation, CUL-MM#1: Mitigate Adverse Effects on Archaeological and Built Resources Identified during Phased Identification and Comply with the Stipulations Regarding the Treatment of Archaeological and Historic Built Resources in the PA and MOA, CUL-MM#2: Halt Work in the Event of an Archaeological Discovery, and Comply with the PA, MOA, ATP, and all State and Federal Laws, as Applicable, and CUL-MM#3: Other Mitigation for Effects on NRHP-Eligible Pre-Contact Archaeological Resources, will avoid, reduce, and mitigate impacts on unknown archaeological resources. The Final EIR/EIS includes the addition of one archaeological resource (CA-SRF-191H) and correction of the trinomial for another archaeological resource (P-41-000498).

17.9.3 FJ-Response-CUL-3: Changes to the Historic Architectural Survey Report

Several commenters implied that revisions to the Historic Architectural Survey Report (HASR) (Authority 2019c) as supporting technical analysis for the EIR/EIS were required by suggesting the APE studied should have included a larger buffer zone that would have resulted in the identification of more historic built resources, and by suggesting identified properties do not accurately represent architectural resources consistent with San Francisco Planning Department records.

The Authority consulted with the California SHPO on the technical findings in the HASR, including several workshop meetings to preview eligibility determinations. The Authority also consulted on the Section 106 finding of effects on historic architectural resources. The SHPO concurred with the identification of historic architectural resources as represented in the HASR on August 19, 2019, and October 9, 2019, as well as the finding of effects on those historic properties, on May 18, 2020. The HASR was circulated to Section 106 consulting parties for review and those comments were considered for revisions made prior to submittal to SHPO. Please refer to the agency and interested parties outreach records in Final EIR/EIS Volume 2, Appendix 3.16-A. Delineation of the APE was consistent with the Authority's Section 106 PA, including selection of buffer zone distances. Identification of known historic built resources reflected in the HASR represents the most accurate data available from a May 2016 record search conducted based on the environmental baseline period. The Authority has evaluated all potential historic built resources identified in comments received on the Draft EIR/EIS, and the Authority has determined that no revisions to the Draft EIR/EIS are required (either because the resource is not eligible for the National Register of Historic Places or California Register of Historical Resources, or because the resource is outside the APE and therefore unlikely to be directly or indirectly affected by the project). Based on the detailed technical analysis presented in the HASR, as well as the input provided by California's SHPO, there is substantial evidence to support the findings presented in the EIR/EIS.

17.9.4 FJ-Response-CUL-4: Continued Tribal Consultation

Several commenters refer to the need for tribal consultation.

The Authority is currently in ongoing confidential consultation with the Amah Mutsun Tribe, Indian Canyon Mutsun Band of Costanoan (Costanoan Indian Research, Inc.), Ohlone Tribe, and Northern Valley Yokuts Tribe. To date, this has included general informational meetings, specific consultation meetings, and outreach correspondence. Please refer to the tribal consultation records in Final EIR/EIS Volume 2, Appendix 3.16-B, San Francisco to San Jose to Project Section Tribal Outreach and Consultation Efforts 2009–2019. The Authority will continue to discuss concerns throughout project planning and development of the Section 106 MOA and associated treatment plans (if needed). This discussion cannot be appropriately addressed in an EIR/EIS because the identification and evaluation phase has not been completed.

17.9.5 FJ-Response-CUL-5: Archaeological Treatment Plan

Several commenters refer to a need for clarity about procedures for archaeological treatment.

Consistent with the Authority's Section 106 PA, the ATP provides detailed descriptions of protection measures for archaeological resources and resources of importance to Federally Recognized Native American Tribes or Native American groups because of cultural affinity. The ATP includes the establishment of environmentally sensitive areas, use of pre-construction archaeological excavation, preservation in place, avoidance, minimization, monitoring during construction where appropriate, procedures to be followed when unanticipated discoveries are encountered, processes for evaluation and data recovery of discoveries, responsibilities and coordination with Federally Recognized Native American Tribes or Native American groups, Native American Graves Protection and Repatriation Act compliance, and curation of recovered materials. The ATP identifies procedures for archaeological data recovery for historic properties adversely affected in instances where adverse effects cannot be avoided.

17.10 Public and Agency Involvement Standard Response

17.10.1 FJ-Response-OUT-1: Public Involvement Process

Multiple commenters were concerned with the public involvement process and suggested that the outreach was not adequate for a project of this size and scope. Several commenters requested an extension of the public comment period on the Draft EIR/EIS. Some of those requests indicated a need for at least a 30-day extension. Commenters also expressed concern regarding availability of supporting technical reports.

Pursuant to the requirements of NEPA and CEQA, the Authority has conducted an extensive public and agency involvement program as part of the environmental review process. Public involvement and outreach included development and provision of informational materials such as fact sheets, informational and scoping meetings (including town hall meetings), public and agency meetings, meetings with individuals and groups, as well as presentations and briefings to interested and/or affected organizations and associations.

Agency involvement included agency scoping meetings, Interagency Working Group meetings with agency representatives, and other agency consultation. Tables 9-1 and 9-2 of the Final EIR/EIS list the key stakeholder outreach meetings held as part of the Authority's outreach efforts associated with the Project Section development process. Public and agency outreach also included notification and circulation of the Draft EIR/EIS and Revised/Supplemental Draft EIR/EIS. Chapter 9 of the Final EIR/EIS describes the public and agency involvement efforts conducted during the preparation, and after publication, of the Draft EIR/EIS and Revised/Supplemental Draft EIR/EIS.

Requests for an Extension

The Authority is the CEQA and NEPA lead agency for the San Francisco to San Jose Project Section and this EIR/EIS. As such, public noticing of the availability of the Draft EIR/EIS for public

review was conducted by the Authority. The Draft EIR/EIS was initially circulated for 45 days as required by CEQA and NEPA. The CEQA Guidelines provide:

> *The public review period for a draft EIR shall not be less than 30 days nor should it be longer than 60 days except under unusual circumstances. When a draft EIR is submitted to the State Clearinghouse for review by state agencies, the public review period shall not be less than 45 days, unless a shorter period, not less than 30 days, is approved by the State Clearinghouse (14 Cal. Code Regs. § 15105).*

Likewise, the Authority, in its role as NEPA lead agency, circulated the Draft EIR/EIS consistent with Section 13(c)(9) of the FRA Procedures for Considering Environmental Impacts, which provides:

> *The Draft EIS shall be made available for public and agency comment for at least 45 days from the Friday following the week the draft EIS was received by EPA. The time period for comments on the draft EIS shall be specified in a prominent place in the document, but comments received after the stated time period expires should be considered to the extent possible (64 Fed. Reg. 101, page 28545, May 26, 1999).*

The Draft EIR/EIS was originally made available for review and comment for a 45-day public review beginning on July 10, 2020, and ending on August 24, 2020. In response to agency and stakeholder requests and in consideration of limitations caused by the COVID-19 pandemic, the Authority extended the comment period by 15 days to end on September 9, 2020. The time provided, including the 15-day comment period extension, was a total of 60 days and was sufficient for the public to review and provide comments on the Draft EIR/EIS.

Circulation and Notice of Availability

Per the requirements set out by the CEQA Guidelines Sections 15086 and 15087 and in accordance with 40 C.F.R. Section 1506.6(b) (1978) and Section 9 of the FRA Procedures for Consideration Environmental Impacts, the Authority provided widespread notice of the availability of the Draft EIR/EIS to ensure that members of the public; local, state, and federal agencies; and Tribes had the opportunity to review and provide comments. The Authority provided broad notice of the availability of the Draft EIR/EIS in the following ways:

- Publication in the legal section of seven local newspapers, including some in Spanish, Chinese, and Vietnamese
- Email to all individuals/organizations who had previously registered to receive information via email about the Draft EIR/EIS
- Direct mailing to those on the project mailing list and those that had requested notice in writing
- Direct mailing to owners/occupants of property within 1,000 feet of the project alternative footprints for unincorporated areas, within 300 feet of the project footprint for incorporated areas, and within 1,200 feet of the HSR station footprint(s)
- Direct mailing to agencies, elected officials, and tribes
- Direct mailing to schools and educational facilities within 0.5 mile of the project footprint
- Direct mailing to school districts with schools within 0.25 mile of the project footprint
- Filed electronic notices with the County Clerks' Offices in San Francisco, San Mateo, and Santa Clara Counties
- Submitted copies to the State Clearinghouse for distribution to state agencies
- Publication in the *Federal Register*

The Authority provided access to the Draft EIR/EIS in the following ways: the entire Draft EIR/EIS, Volumes 1 through 3, were made available on the Authority's website; electronic media

containing these documents were made available to anyone who requested them via the Authority's website, free of charge; and electronic media and printed copies were made available for public viewing in the Authority's Sacramento and San Jose offices. In the months prior to the July 10, 2020, Draft EIR/EIS publication date, the Authority maintained regular contact with the repositories regarding their capacity to receive and maintain the distribution materials for public review, and electronic media and printed copies were prepared for the public libraries in the vicinity of the project. However, due to the COVID-19 pandemic, all repositories were closed or operating with limited public access in compliance with Governor Newsom's shelter-in-place order (EO N-33-20) and applicable County Health Officer directives.

All technical reports and other documents referenced in the Draft EIR/EIS were available in electronic form by request via the Authority's website or by calling the Authority office at (800) 435-8670. These supporting documents were not provided on the website; however, copies were promptly provided upon request.

The Authority also facilitated awareness of the availability of the Draft EIR/EIS and the comment period in the following ways: by using mailed announcements and e-blasts, by providing information during monthly agency meetings and regular consultations; and by holding three virtual open houses and a virtual public hearing during the public review period for the Draft EIR/EIS.

The public was given the opportunity to comment on the Draft EIR/EIS in several ways. Comments could be submitted to the Authority by mailing a hardcopy letter, verbally at the virtual public hearing, or electronically through email or through the Authority's website. The Authority has considered all comments on the Draft EIR/EIS received during the 60-day comment period between July 10 and September 9, 2020. These comments and the Authority's responses are included in the following chapters of this Final EIR/EIS: Chapter 18, Federal Agency Comments; Chapter 19, State Agency Comments; Chapter 20, Local Agency Comments; Chapter 21, Elected Official Comments; Chapter 22, Tribe Comments; Chapter 23, Business and Organization Comments; and Chapter 24, Individual Comments. A total of 148 submission letters were submitted on the Draft EIR/EIS. These submissions were provided via email, via mailed letters, and via the Authority's website. Within these submission letters were approximately 2,121 individual comments.

Public Hearing and Meeting Notices

The Notice of Availability (NOA), which was distributed initially on July 10, 2020, included notice of an in-person public hearing on August 19, 2020, as well as in-person open houses on July 20, July 30, and August 5, 2020. In addition to notification efforts described above in the Circulation and Notice of Availability section, the Authority also posted the NOA on the Authority's San Francisco to San Jose Project Section webpage with a link from the Authority's homepage. The Authority also issued a press release on July 10, 2020, with the specific hearing and meeting information.

Prior to the distribution of the NOA, California Governor Gavin Newsom announced directives to address the need to slow the spread of COVID-19 in California (and globally) by prohibiting gatherings of any size. In addition, Governor Newsom issued EO N-33-20, which ordered all individuals living in the State of California to stay home or at their place of residence, effective immediately and until further notice. In order to comply with the Governor's directives and EO N-33-20, and to protect public health, the Authority changed the traditional in-person format for the public hearing and open houses to a "virtual" format held online and via telephone. Up-to-date information on the public hearing and open houses were made available on the Authority website.

To facilitate the three virtual open houses and public hearing, various publications and materials were developed in English, Spanish, Vietnamese, Chinese, and Tagalog. These documents included the Statewide High-Speed Rail Fact Sheets, the San Francisco to San Jose Project Section Summary, and the NOA. In addition, the Authority website includes information about HSR, the proposed HSR route, the Authority's Business Plans since 2008, newsletters, press releases, board of directors meetings, recent developments, status of the environmental review

process, Authority contact information, and related links. Language interpreters were available at the virtual open houses and public hearing.

Comments Received After the Close of the Comment Period

The Draft EIR/EIS was circulated for public review and comment for 60 days between July 10, 2020, and September 9, 2020. There were seven submissions received by the Authority following the close of the comment period. While these submissions were not timely because they were not submitted within the comment period, they were considered and responded to in Volume 4, Responses to Comments on Draft Environmental Impact Report/Environmental Impact Statement, of this Final EIR/EIS.

17.10.2 FJ-Response-OUT-2: Consultation with Local Agencies and Consistency with Local Regulations

Some commenters claimed that the Authority has failed to consult with local agencies as required by law. Several commenters questioned the statement made in the Draft EIR/EIS that the Authority is not required to comply with local regulations for various resources.

The Authority has consulted extensively with local government officials and local public agency staff during the planning and design of the project alternatives and the development of the EIR/EIS. Chapter 9 of this Final EIR/EIS documents local public agency consultation activities from April 2009 through December 2020. Additionally, Section 9.4.2.8, Agency Meetings and Consultation, of this Final EIR/EIS summarizes the coordination efforts with cooperating agencies.

The project is being undertaken by a state agency (the Authority) and the Authority is acting as the federal lead agency pursuant to the MOU executed by the FRA and the Authority on July 23, 2019. The project must conform to the policies and objectives of the statutes and regulations under which the Authority operates, including all applicable state and federal regulations. Some commenters suggested the project must conform to local general plans. Since an agency of the State of California is the project proponent, the project is not subject to local government general plan policies or zoning regulations.

The state's immunity from local regulations is an extension of the concept of sovereign immunity. The Authority, as the proponent of a "sovereign activity of the state," is not subject to local land use regulations (see, e.g., *Town of Atherton v. Superior Court* (1958) 159 Cal.App.2d 417, 428, citing to *Hall v. Taft* (1956) 47 Cal.2d 177, 183; *Lawler v. City of Redding* (1992) 7 Cal.App.4th 778, 784.). Unless the Legislature expressly waives this immunity in a statute, which it has not done here, the general rule is that a local agency cannot regulate state activities (See *Del Norte Disposal, Inc. v. Department of Corrections* (1994) 26 Cal.App.4th 1009, 1013). At a practical level, it would not be feasible for the State of California to develop a statewide HSR system traversing hundreds of linear miles if the system were subject to local general plans and zoning across the dozens of individual local government jurisdictions through which the system traverses.

Nevertheless, the Authority recognizes that the project would be most successful if designed in a manner that is as sensitive as possible to the local environment through which it must travel, while still meeting the unique design constraints of HSR service. Furthermore, through meetings with local agency staff and direct discussions with individual local government officials and staff, the Authority has endeavored to develop a project design that minimizes local impacts and is as consistent with local plans as possible. Consistent with CEQA and NEPA requirements, the project's consistency with local general plans and zoning regulations is discussed in the EIR/EIS in Section 3.13, Station Planning, Land Use, and Development; and further in Volume 2, Appendix 2-I, Regional and Local Plans and Policies, and Appendix 2-J, Policy Consistency Analysis. Appendix 2-J also contains a discussion of the extent to which the Authority would reconcile the project with local plans as required by 40 C.F.R. Section 1506.2(d).

17.10.3 FJ-Response-OUT-3: Local Government Permits

Several comments from local jurisdictions noted that any construction activities within their jurisdiction would require local construction or encroachment permits.

As discussed in Section 2.11, Permits, of the Final EIR/EIS, construction of the California HSR System will require Authority contractors to obtain a number of federal, state, regional, and local permits. As a state agency, the Authority will obtain all required federal and state permits. Regional permits, such as those required by a regional air quality management district, will be obtained by the Authority when necessary. As a state agency, the Authority is exempt from local permit requirements; however, to better coordinate construction activities with local jurisdictions, the Authority plans to pursue local construction and access permits whenever practicable and consistent with the terms of the Authority's applicable contracts.

Following the completion of the CEQA and NEPA environmental review process, the Authority does not anticipate it will be required to conduct additional environmental review under CEQA or NEPA in connection with applying for permits from local agencies. As project planning moves through preliminary and final design phases, however, the Authority may have to prepare supplemental or subsequent EIRs, supplemental EISs, or both to address changes in project design or construction, as required by CEQA and NEPA. Such environmental documents would be noticed and published consistent with all legal requirements.

Some of the local permits the Authority may obtain include those related to street closures and traffic detours, and street and utility improvements and relocations. Additional local government permits may be obtained related to station construction.

Following the completion of the CEQA and NEPA environmental review process, the Authority plans to enter into cooperative agreements with each impacted local government agency to assist in the coordination of construction within such jurisdictions.